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UNIVERSITY OF ILLINOIS

Issued From The HIGH SCHOOL VISITOR'S OFFICE

PROCEEDINGS OF THE HIGH SCHOOL CONFERENCE OF NOVEMBER 21, 22 and 23, 1918

Edited and Compiled by the High School Visitor

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THE 1919 CONFERENCE WILL BE NOVEMBER 20, 21, AND 22

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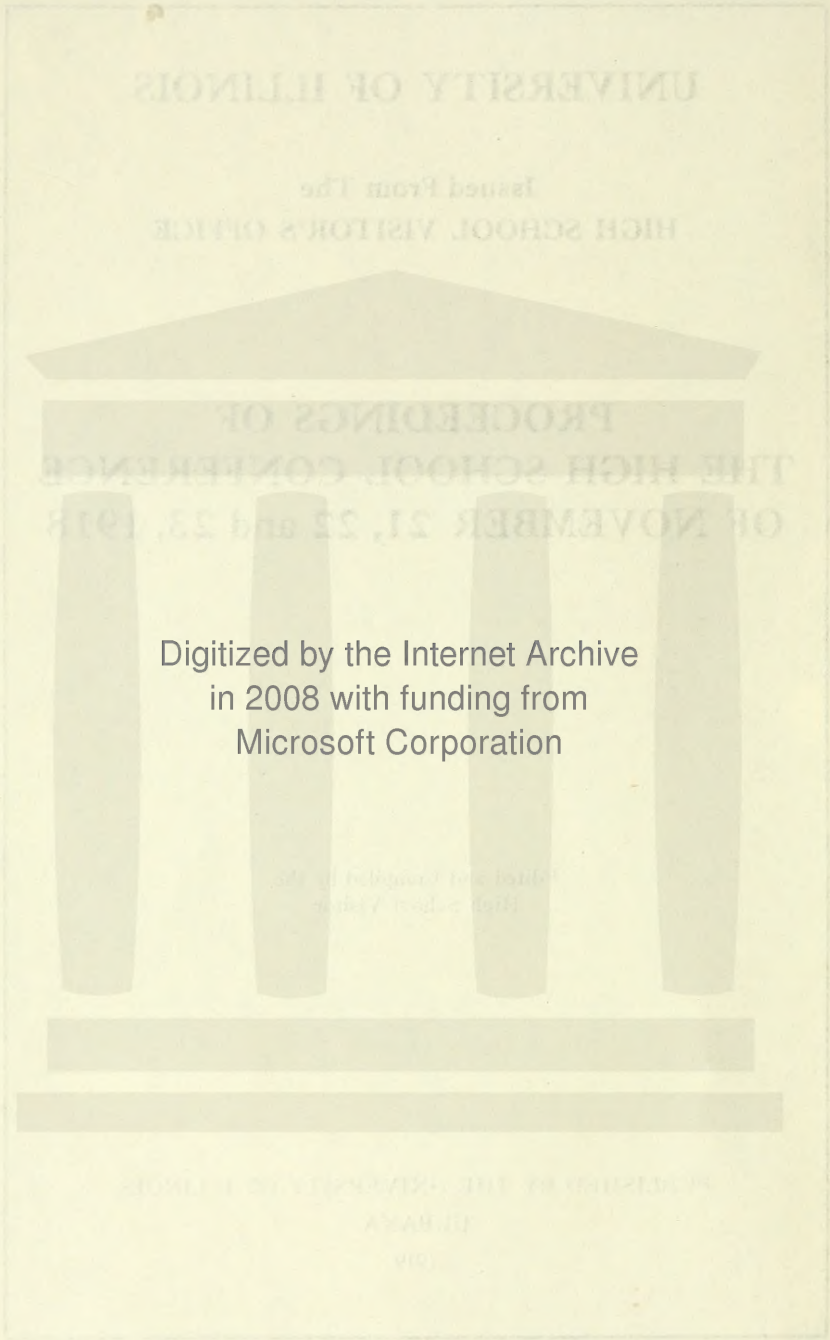

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CONFERENCE COMMITTEES

General Conference Committee: H. A. Hollister, University, Chairman, and Director of the Conference; J. Calvin Hanna, State Department, Springfield; H. V. Canter, University; W. W. Charters, University; E. C. Hayes, University; A. P. Johnston, Urbana; W. W. Earnest, Champaign (The above constitute the Executive Committee); W. L. Goble, Elgin; D. H. Wells, Litchfield; J. H. Whitten, Chicago; Harriet L. Bouldin, Springfield; I. L. Rogers, Waukegan; S. D. Faris, Carthage; Florence H. Churton, University; H. D. Widger, Charleston; W. E. Andrews, Pana; E. J. Lake, University; H. O. Barnes, Springfield; Blenda Olson, Macomb; J. Lawrence Erb, University; Louise Freer, University; J. B. Wallace, Gilman; M. L. Flaningam, Urbana.

Administrative Section: W. L. Goble, Elgin, Chairman, 1919; W. R. Spurrier, Princeton, 1920; R. G. Beals, Taylorville, 1921; W. D. Waldrip, Streator, Secretary-Treasurer.

Agriculture Section: D. H. Wells, Litchfield, Chairman, 1920; A. H. Lancaster, McNabb, 1919; C. E. Trout, Jerseyville, 1921; D. L. Reid, Urbana, 1921; A. W. Nolan, University, Secretary, 1919.

Biology Section: J. H. Whitten, Chicago, Chairman, 1921; H. B. Shinn, Chicago, 1920; Nettie M. Cook, Springfield, Secretary, 1919.

Classics Section: Harriet L. Bouldin, Springfield, Chairman, 1919; Julia F. Evans, Maywood, 1921; Mima Maxey, Carlyle, Secretary, 1920.

Commercial Section: I. L. Rogers, Waukegan, Chairman, 1920; Agnes Barrett, Centralia, 1919; N. A. Weston, University, 1921; D. L. Lewis, Danville, Secretary, 1920.

County Superintendents' and Village Principals' Section:	S. D. Faris, Carthage, Chairman, 1920; W. A. Hough, Belleville, 1919; O. Rice Jones, Paris, 1921; C. H. Watts, Urbana, 1921; W. S. Booth, Springfield, Secretary.
Domestic Science Section:	Florence H. Churton, University, Chairman, 1920; Isabel Bevier, University, 1920; Kathleen Gaynor, LaSalle, 1919; Helen Murphy, Decatur, 1919; Emily Frake, Chicago, 1921; Anne Stoker, Centralia, 1921.
English Section:	H. D. Widger, Charleston, Chairman, 1919; A. F. Trams, Joliet, 1919; B. S. Richardson, Alton, 1920; Alice Bidwell, Freeport, 1921; Bess East, Champaign, 1921.
Geography Section:	W. E. Andrews, Pana, Chairman, 1921; J. L. Rich, University, 1920; F. W. Cox, Flora, 1919.
Manual Arts Section:	E. J. Lake, University, Chairman, 1919; Heber C. Taylor, Oak Park, 1919; Erwin Touve, Marion, 1920; Mrs. Nellie Wall, Danville, 1921; H. C. Mohler, Decatur, Secretary, 1920.
Mathematics Section:	H. O. Barnes, Springfield, Chairman, 1919; Jessie Brakensiek, Quincy, 1920; C. M. Austin, Oak Park, 1921; Bess F. Cline, Urbana, Secretary, 1920.
Modern Language Section:	Blenda Olson, Macomb, Chairman, 1919; John D. Fitz-Gerald, University, 1920; Lydia M. Schmidt, Chicago, 1921.
Music Section:	J. Lawrence Erb, University, Chairman, 1919; L. Louise Bear, Decatur, 1920; Mrs. Homer E. Cotton, Kenilworth, 1920; Mabel Glenn, Bloomington, 1921; Edna King, Joliet, 1921; Mrs. Elizabeth McNair, Mattoon, Secretary, 1919.
Physical Education Section:	Louise Freer, University, Chairman, 1919; Gertrude M. Baker, Normal, 1920; Nellie E. Bussell, University, Secretary, 1921.

Physical Science Section:	J. B. Wallace, Gilman, Chairman, 1919; B. S. Hopkins, University, 1921; T. M. Barger, Normal, Secretary, 1920.
Social Science Section:	M. L. Flaningam, Urbana, Chairman, 1920; U. S. Parker, Quincy, 1921; A. C. Cole, University, Secretary, 1919.
Interlocking Committees:	1. *Biology and Agriculture;* J. L. Pricer, Normal, Chairman; W. E. Andrews, Pana; L. F. Fulwiler, Mt. Pulaski. 2. *Languages:* John D. Fitz-Gerald, University, Chairman; J. Calvin Hanna, Springfield, Florence Skeffington, Charleston.
Committee for the Correlation of Sciences:	*Agriculture,* D. H. Wells, Litchfield, A. W. Nolan, University; *Biology,* H. D. Waggoner, Macomb, J. L. Pricer, Normal; *Domestic Science,* Ruth Patrick, Hinsdale, Hazel Shultz, Monmouth; *Geography,* J. L. Rich, University, W. E. Andrews, Pana; *Physical Sciences,* F. D. Barber, Normal, A. W. Marker, Decatur, H. J. VanCleave, University, Chairman.

STATISTICS OF THE HIGH SCHOOL CONFERENCE 1917-18

	1917	1918
Total Attendance	1700	950
Total No. registered	1645	936
Total registration exclusive of the University	1547	815
No. Public High Schools represented	367	283
No. of High School teachers	1466	748
No. representative of Colleges and Academies	26	24
No. representative of Normal Schools	20	13
No. representative of School Boards	1	1
No. of County Superintendents	15	9
No. representative of book houses, etc.	19	20
No. of High School teachers whose expenses were paid in full	172	207
No. of High School teachers whose expenses were paid in part	436	119
No. of High Schools represented by delegates whose expenses were paid in full or in part	173	167
Following is the registration by sections:		
Administrative	217	189
Agriculture	50	18
Biology	91	31
Classics	129	45
Commercial	77	37
County Superintendents and Village Principals	33	35
Domestic Science	115	46
English	262	126
Geography	19	8
Manual Arts	52	27
Mathematics	158	80
Modern Language	82	52
Music	51	27
Physical Education	80	13
Physical Science	85	49
Social Science	90	64
No section given	54	89
	1645	936

NOTE. It was to be expected that the attendance for 1918 would be much below that of previous years. The influenza was still prevalent in many sections of the State. Where it had abated the schools had been closed so long that Boards were naturally averse to the loss of additional time.

PART I

GENERAL SESSIONS

1. Introductory Statement

The General Sessions of the 1918 Conference mark a distinct deviation from the practice at previous conferences. Early in the year the Director saw the necessity of turning the forces of this organization as strongly as possible towards the solution of some of the basic problems underlying the demands facing us for educational reconstruction.

At the first meeting of the executive committee in September there was placed before the committee a proposed plan of procedure. After some discussion this plan was unanimously approved, and the Director's proposition to submit it to the Faculty of the College of Education of the University for further discussion and a more detailed outlining as to methods of treatment was also approved.

The proposals made were similarly approved by the Faculty of the College of Education at a special meeting called for their consideration and the hearty cooperation of that body was assured. At this meeting plans were also perfected as to the methods of presenting the proposals for investigation and action before the Conference.

The general problem proposed was that of making "the high school the upper limit and the minimum requirement of universal education in Illinois." To this end the following specific problems were outlined:

1. The necessity of broadening the scope of high-school education wherever needed. This involves a campaign for the organization of numerous new high-school units under the community high-school law.

2. The necessity of making provision for the better training of teachers, both elementary and high-school.

3. The extension of compulsory attendance to 18 years, thus requiring that provision be made for the economically incompetent, either by establishing part-time and continuation schools or by actual subsidization of families to the extent of the earnings of children necessary to the family support during school attendance.

4. The most complex problem of all, yet fundamentally essential, such a thorough readjustment of high-school curricula and those leading up to the high schools as such a plan, with the demands of the times, will naturally require.

2. Thursday Evening

The program opened with a much appreciated organ recital by Professor J. Lawrence Erb. The attendance for the first evening was fully up to the record of previous conferences.

The Director of the Conference, Professor H. A. Hollister, presided. Dr. B. R. Buckingham, the recently appointed Director of the Bureau of Educational Research, was presented and spoke as follows:

Dr. Burdette R. Buckingham's Talk Before the High School Conference, November 21, 1918

Ladies and Gentlemen and Fellow Workers in the Field:

To be introduced as a new thing is a little embarrassing; but it is a lot better than not being introduced at all. The matter of salesmanship requires contact and I am very glad of the opportunity to present my wares in this pleasant way. The Bureau of Educational Research, while, as an organization, it is a new thing in the University of Illinois, is not in spirit by any means new, either here or elsewhere. It represents, however, an effort to co-ordinate certain efforts and interests which have been more or less scattered, to bring them to a focus, and to apply them so as to enlist the labors of many.

I take it that this is in thorough accord with the signs of the times. We are met in this *annus mirabilis,* the victory year of the world. A democracy, we are told, has many responsibilities; and while this is a truism, it may with benefit be repeated. But straightway the problem arises—What are the new responsibilities of the victorious democracy? We have been told that the blessings of democracy are invariably sacrificed to efficiency and strength; that it is the one-man government, or the government of a few, which gets things done and arrives on time. We now know that this is not of necessity true. We may have had misgivings about it sometimes, but one way or another we have come through and we have come through gloriously.

One of the things that in education, as in every institution through which the life of the nation is vitalized, we need to take to heart, is the new responsibility which is thus thrust upon us. The American people have lately learned to think as a nation, and as a result there has arisen a national consciousness. Our activities in the war were the activities of a nation. We have been called the melting pot of the nations. The term was too complimentary; all we were, indeed, was the pot of the nations. It was the war that did the melting; and as we come forth from the war, I fancy I will be saying what you yourselves already think when I declare that there is a new national consciousness.

The American people know as they never did before that they can do things and do them together. People said—Why, you can't make all the men in this country between the ages of 21 and 35 come up and register; and if you could, you cannot make them come out and train to be soldiers. They just won't do it. And actually no small preparations were made on the occasion of the registration to suppress riots. But the riots did not occur. Our enemies said that if we *could* raise an army we couldn't put it across into Europe. It just *couldn't* be done. Yet in eighteen months the nation raised an army of four millions and transported over two millions of them across three thousand miles of enemy-infested seas. Why, just in little things—putting the clock ahead an hour, for instance, and saving a million tons of coal—the results were unexpectedly large. We launch a ship in 27 days from the laying of her keel, and in 43 days she discharges her cargo in a distant port. There was more concrete construction in the work of the Shipping Board, thirty times over, in a single day, than there was in a week in the construction of the Panama Canal. We have built two and three ships a day and housed and fed and clothed and trained the workmen; and since we hadn't the shipyards, we built them, too. Because

of such things it seems to me that the nation is becoming conscious of its power. There isn't much that the American people need feel that they cannot do.

In the matter of education it is not otherwise. We spend in this country on education of all kinds, public and private, elementary and high and college, about $900,000,000 a year, and on public education about $700,000,000. There were times when these would have seemed like huge sums; but the things we have read about in the past months, the newspaper and magazine articles which have told of colossal taxes raised, loans floated, and contracts let, have accustomed us to reckon large enterprises in units of a billion. Really, if a project doesn't cost a billion dollars we scarcely look at it; it doesn't get any prominence on the front page of the newspapers.

Now when we reflect that this business of education permeates every part of the country, that there isn't an inhabited square mile that isn't in some school district, that it is ministering directly today to one-fifth of the entire population of the country and that it has ministered and will minister to practically all the rest of it, we begin to see that the amount of money spent on education isn't, after all, so huge a sum. Fundamentally today the thing that we need to grind into the consciousness of the American people is the fact that they can do things as they never could before, that they can afford money as they never could before for the things that are worth while and that they can afford it for education. If there is one thing more than another that conditions the success of education in the large task that confronts it in this reconstruction period, it is money. In the use of that money two-thirds of it will be for teachers' salaries.

Now, you all know that the teacher shortage is acute. I read but a few days ago that in one of our large cities from two to three hundred classes are daily without any teacher—or even a person posing as a teacher. A great deal of the shortage in teachers isn't represented by vacant positions. It is represented by an inferior person in the classroom,—that is, inferior as a teacher. It is represented by the necessity that boards of education are under to accept the services of people whom in normal times they would not employ.

I made a study a short time ago of the conditions in regard to the supply of trained teachers in one of the great progressive states of the country. Although legislation was pending relative to the matter, no one knew how many new teachers were annually employed in the state, how many, in other words, were required annually to recruit the force. No one knew whether the teacher-training institutions were turning out a sufficient number of graduates to meet the situation or whether, if they did, the graduates became teachers in the state. A little investigation disclosed the fact that, in reality, the teacher-training institutions were falling quite twelve hundred persons short of the number annually required by the schools; and that the number of teachers appointed in that state equalled fully one-fourth of the entire teaching force. Now fancy any continuing business being required to employ one-fourth of its labor annually. And not only that; imagine that in this industry, with big plants and little plants all over the country, besides the fact that one-fourth of the labor was recruited annually there was a restless movement of operatives between one city and another and between one plant and another. Imagine, also, that although all were engaged in the same enterprise, the managers of the different plants were bidding against each other and inducing these operatives to leave positions where they were needed and where indeed they had often contracted to remain. Some such situation as that is the situation in which teaching is today.

Now, when I looked into the reasons for this, chief among them was found to be the inadequacy of the teachers' salaries. I found that of the more than four thousand teachers who entered upon service in that state in the year in question the average salary was $59 per month. The annual salary, on the average, of these four thousand odd teachers was $545. If that sum is spread out over the entire year it amounts to $45 a month. Now you and I well know what sort of chance there is in any other line of work for employing service at $45 a month. House maids, when you count their board, get more; clerks

in stores get more. And this is the inducement that is offered to high school graduates to enter a teacher-training institution, to remain there from one to four years and to accept a teaching position in the public schools.

By concentrating one's attention sufficiently long upon one topic in a certain field one may come to feel that it is more important than any other. This may be an illusion. But I judge you will agree with me that, after all, if any factor in the field of education is entitled to first place, it is the teacher. Some will say that supervision is the controlling factor, others will give first rank to organization, and still others to financial support. But organization and supervision exist in order to secure and direct teachers, and financial support finds its greatest use in the employment of a sufficient number of well trained teachers. Therefore, it seems to me, one may say (to paraphrase a saying of Locke's) that the school which has good teachers needs little else and that the school which is without good teachers will be little the better for anything else.

In the Bureau of Educational Research, while we shall assist in all matters of investigation up to the resources of the Bureau, one of the things that we should most like to do—and it is directly in line with one of the major projects that Professor Hollister has in mind—is to investigate this whole teacher-training situation. I think there is not a state in the union that knows in a really satisfactory way what the situation is with regard to its teachers. There is no central agency and no knowledge of the total situation anywhere so far as I have ever been able to discover. I know, for example, that in the state of which I am speaking, at a time when there was a shortage in certain lines of teaching, a large proportion of the graduates qualified in those lines were actually leaving the state. In one instance, when there was a shortage of kindergarten teachers there was not a single graduate of one of the two kindergarten courses supported by the state who became a kindergartner in the state. The positions were filled by untrained people or by people brought from the outside, or by people trained for something else, but they were *not* filled by people who were most obviously trained to fill that type of position.

But there are many other topics which need attention besides the supply of trained teachers for the schools. In this state I have lately sent an inquiry to superintendents and principals. I have asked them whether they were interested in the experimental study of education, whether they wished to unite in such study, and what problems they were interested in. I have received about two hundred replies within the last few days. The response has been splendid; and the number of topics suggested has been very great. The willingness of the superintendents and principals who replied, to join forces with each other to study these questions is practically unanimous.

If there is a sufficient support on the part of the school men and women of the state for this Bureau, if it fills a long-felt need, as those who are writing to me say it does, then there is great hopefulness for the work that the Bureau can do. The limit of its resources will practically be conditioned by the demands made upon it by the people of the state. It is not only in the matter of testing of school subjects that the Bureau wishes to serve, but in all kinds of problems which confront the schools of the state. I welcome this chance to present its work to you. I do not regard it as a presentation of myself but simply, through me, of the Bureau which I am directing. If it commends itself to you, let us hear from you. There are things that have been dragging along for many years,—things we all know should be done. The war has come along with its great social upheaval. It has given us a new sense of solidarity, a new appreciation of our resources, and a new sense of values; and it has presented us an opportunity to do things and to do them quickly such as we have never had before and such as we are not likely to have again.

The committee had assigned to the Director the duty of presenting somewhat in detail the problems proposed in taking up the cam-

paign for making **High-School Education a Universal Standard.** The following is Professor Hollister's statement of the plan:

It is proposed to take up the serious study by this Conference of the essential problems involved in making the high school of Illinois the upper limit of prescribed universal education. The four problems proposed to the executive committee by your Director and approved by that committee as the essential problems requiring consideration are as follows: (1) That there be a broadening of the scope of high-school curriculums wherever a sufficiently comprehensive breadth is not already an accomplished fact. (2) There is needed a change in our compulsory attendance law extending the age to 18 years. (3) A more adequate provision is needed for the preparation of teachers, both elementary and high-school. (4) To such an end there will be required a thorough readjustment of high-school curricula and those leading up to the high school.

All teachers, supervisors and students of education in Illinois are earnestly invited to join in this campaign for readjustment in order that we may establish here a more highly efficient system of education and thus prepare to do our full part in the larger problems of world reconstruction, socially, which now confront us.

The challenge is to all to lay aside any differences that may have divided us and to enter upon this campaign with the serious purpose of those who would render a self-sacrificing, patriotic service in a time of the world's greatest need. To this end let us try to forget our own pet theories and all thought of professional profiteering in order that we may make a thorough investigation of the problems involved. Let us try to get back to fundamental elements as a basis, and work patiently through to the completion of our task whether the time required be one year or five or even more. Let us not rush too hurriedly into the mazes of innumerable details. Let us rather seek out the simple radical elements of our problem and so build slowly, securely and harmoniously.

Our greatest problem, after all, will be to establish a favorable sentiment sufficiently strong and unanimous to overcome traditions and other static conditions that always stand in the way of progress or reform. In order to do this we should seek the widest and freest participation in discussion both professionally and by the larger public. We should avoid that which is controversial and keep to those lines and principles which all will recognize as fundamental.

With this statement of the general aim and purpose of this discussion let us now consider somewhat more in detail what is involved in the four problems stated at the beginning.

Education, to become universal, must first become free. Now there are at least three important factors essential to such freedom: First, each given *type* of education must be accessible to all. Second, there must be no tuition charge to the individual or his family. The school must rather be a charge upon the community and the state. Third, the curricula offered must be sufficiently varied to meet the needs and capabilities of all normal persons at any given stage in the educative process.

The second one of these conditions, as it affects high schools, the state of Illinois has provided for permissively in the high-school tuition law. The first and third conditions are still far short of accomplishment. There are still many communities for which there is no adequate high-school available. Either the distances are too great or else the nearby school does not meet the needs of those who might otherwise seek its service. Thus in a certain sense the remedying of the first condition depends upon adequate provision for the third, that is, the offering of additional curricula.

In many instances the complete remedy under the first condition will involve the establishing of community high schools. The state will require some hundreds more of this type of school in order to furnish an adequate number of free high schools. Even with this increase in numbers there will

still remain the problem of transportation for those living beyond a reasonable walking distance from a high school carrying a full program of curricula.

The completely organized high school must always depend somewhat upon the size of the school, a factor which the organization of larger territorial units alone can provide for. There is further involved the problem of financing the school, which is another urgent reason for the early increase in the number of community high-school districts.

The extension of the age of compulsory school attendance would be necessary in order to attain universal education through the high school. This would call for an amendment to the present law. But with such an extension there would be needed some provision that would save the economically incompetent from an excessive burden. There are two ways of doing this that suggest themselves: One is the part time or continuation school already quite extensively used in some sections of the country. A second would be a plan to provide for the subsidization of families in order to compensate for the wages of children whose help would otherwise be actually necessary to the family support.

The third problem, like the second, is more a matter of requiring action than much discussion. We are still far short of making adequate provision for the satisfactory preparation of enough teachers for our elementary and high schools. With the existing condition it would be practically impossible to put into general effect any very completely reconstructed curricula. As means for the solution of this problem may be considered,—(1) the establishment of teacher-training courses in our high schools; (2) an increase in the number of normal schools with perhaps a more decided differentiation of types; (3) additional facilities for the professional training of teachers and supervisors in our colleges and universities. Along with this there should come also a still higher requirement for the licensing of teachers and supervisors. Before any such increase in facilities for training are made there should be a careful survey and estimate made for the entire state and for different sections of it. There should be included in such an investigation a careful study of teachers' tenure and pay in the state. From this should come definite recommendations as to readjustments needed in order to secure fair and just conditions as an inducement to teachers to qualify more thoroughly for the work of instruction and management.

We come now to the consideration of the fourth and most complex of the problems included in this undertaking. This is no new problem. It has been under consideration in this country for at least a half century and it has been the center of attack in practically every reform movement throughout the entire history of education. This is the problem of readjustment of curricula for the high school and of those leading up to the high school. Let it be understood that this plan for an investigation is not undertaken in the interests of or for the peculiar benefit of any institution or class. It is too big with possibilities and meaning to admit of such interpretation. It is at the request of the executive committee that I undertake to present to you here the purpose and general significance of this campaign upon which you are invited to enter and to participate in freely.

The conditions which war has revealed to us in our own country educationally, and those produced by it throughout the world seem inevitably to demand prompt and thorough-going treatment of this matter of educational readjustment. If we are ever to get right fundamentally in our system of school education now is the time to strike. It is useless to expect satisfactory results from adjustments in the secondary field unless these are based on pretty clearly defined normal conditions in the grades below.

From the days of Athenian democracy mankind has agreed that the prime requisite for successful self-government of a people is a high level of intelligence among the masses. In these later times, when the social order has become exceedingly complex, men realize that this common level of intelligence must include something more than the mere rudiments of education,—the three

R's, as we are accustomed to phrase it. Skill and intelligence in all forms of labor; honest thrift and sound economic principles in business; a clear understanding of our institutions in their relation to our social well being; ability to appreciate the value of science as it applies not only to industry but also to health, both public and private; sound ethical judgment as applied to all human relationships; and a fair appreciation of the principles of art as applied to home and community, are the essential elements which common school education should make a common possession of the people of this great republic. If it is impossible to accomplish this, then our dreams of democracy must always be subject to serious limitations if, indeed, they are not quite beyond realization.

The one greatest of all things necessary in order to achieve results commensurate with our needs is a sufficient number of teachers, or at least supervisors of teachers, who are able clearly to visualize these essential elements of education. It is they who are so to direct the study and exercises of the school as to attain the desired results. Given the teachers and supervisors sufficiently qualified to meet such requirements and the problem of readjustment would cease to exist.

The real tests and standards ultimately to be set up as a basis for determining the achievement of pupils and the efficiency of instruction are not to be found in the present levels of achievement, grade by grade, in the schools; nor will they appear in what is found as most common in the demands of the social group as expressed in current literature, text-books or customs. They are rather to be expressed in terms of what is essential in the lives of a free, self-governing people dwelling together in real peace. The measure of their imparting to pupils, grade by grade, will be found in the limit of pupil capacity to appropriate, as skill and knowledge, in any given period of time and of individual development of mind and body.

The possibilities of individual development in skill and knowledge for any given period of physical and mental growth must be determined very largely by the nature of the conditions effective in developing them during the periods immediately preceding. If, then, it is shown that for a considerable proportion of the pupils in school the preceding steps in the educative process have been neither organized nor conducted in the most effective manner then the present common standards of achievement for a given grade can not be considered a valid criterion for future accomplishment in all cases.

Let us not be misled, therefore, by such standards and minimal essentials as have been established on the basis of our present low averages of achievement in universal education. These standards serve a very useful present purpose; but it is our business to see to it that, if possible, the standard for each given grade or period is normal with regard to the pupils' capabilities up to the point of highest efficiency. This is one of the important preliminary conditions to be determined in any scheme of readjustment.

What, then, are the norms to be considered in determining such standards? They are to be found in what we have already named above as the essential elements of common-school education: skill and intelligence in labor,—in doing the things that need to be done; thrift and the application of sound economic principles in all phases of commerce and exchange; social and civic intelligence; appreciation of science as applied to industries and to living; sound ethical judgment,—the common sense application of principles of right and justice in ordinary human relations; an appreciation of art as ministering to the happiness of man and his ideals of nobility. In these lie not only the norms and tests of all achievement in education, but also of the validity of the use of any type of materials, methods or processes in the disciplines of the school.

True it is that not all of these accomplishments are to be perfected in the schools alone. Much must rest with the home and the social order of the community. But a perfected system of education will find ways by which these various factors may work cooperatively to a common end.

All discussions of educational theory indicate a strong setting of the current of thought towards such a conception of education, a conception which leads away from that blighting formalism of teaching subjects as abstract things, sufficient in themselves. Shall we not, then, say that the time has arrived when we should use all conventionalized types of organized materials as only means to these larger ends? If we do thus agree, then those who teach must learn, as a part of their preparation, to visualize clearly these more tangible objectives in order that they may be able to adapt all materials and processes to their attainment.

In our search for basic truths on which we may agree in our investigations of the things essential to readjustment we need scarcely trouble ourselves about such matters as to whether the various development periods of the child in education are concomitant or serial. The recapitulation theory and all similar speculations may well be relegated to the realm of abstract scholasticism. All of us who have observed children in their development know that they first begin their interrogatories with "what is it;" then later, "why, when, where or how is it;" and finally, and quite early in life, they are able to say "because" intelligently. And we all of us continue these interrogatories, with corresponding affirmations, at varying levels of significance, to the end of our days.

On the other hand the one thing on which most of the educational reformers of modern times have insisted in common is that all education should be based upon tangible objectives dealing primarily with those phenomena in nature and those social institutions and standards of conduct immediately environmental. The great educational movements of the Renaissance were marked by a broad humanism which sought to base knowledge on realities instead of vocabularies without content. Erasmus, Neander, Melancthon, all questioned the value of the classics where no real knowledge was to be obtained. Neander recommended the study of history, geography, science and music as a basis for interpreting the ideas of the Ancients as conveyed in classic literature. Rabelais represents a revolt against formalism. He advocated instead such training of body, mind and character as to develop in the individual ability to live at his best in a world of men.

Mulcaster, Montaigne, Locke, Rousseau, Milton were all strong in their advocacy of a natural scheme of education. Stripped of their varying degrees of radicalism as to method the ideas of this group are fairly expressed in Milton's definition of education: "I call, therefore, a complete and generous education that which fits a man to perform justly, skillfully, and magnanimously all the offices, both private and public, of peace and war."

Martin Luther, in his Letter to Mayors and Aldermen, in which he sets forth the civic aims of education, said: "The highest welfare, safety and power of a city consists in able, learned, wise, upright, and cultivated citizens who can secure, preserve, and utilize every treasure and advantage. * * * Though there were no soul, nor heaven, nor hell, but only the civil government, would not this require good schools and learned men more than do our spiritual interests? * * * For the establishment of the best schools everywhere, both for boys and girls, it is a sufficient consideration that society, for the maintenance of civil order and the proper regulation of the household, needs accomplished and well trained men and women." Again, in his Sermon on the Duty of Sending Children to School, Luther declares that "the civil authorities are under obligation to compel the people to send their children to school. * * * If the government can compel such citizens as are fit for military service to bear spear and rifle, to mount ramparts and perform other martial duties in time of war; how much more has it the right to compel the people to send their children to school."

Pestalozzi and his disciples, Froebel and Herbart, emphasized strongly a natural as contrasted with formal education. Pestalozzi defines education as "the natural, progressive, and harmonious development of all the capacities and powers of the human being." His work found expression in an industrial way through the teaching of Fellenberg, Zeller and Wehrli.

In America there have been may disciples of Pestalozzi and his European followers, each with his own particular interpretation and method of applying the original principles. Among these in an earlier period were Colburn, Barnard, Horace Mann, and Sheldon with his "Oswego Method." Later were F. W. Parker, Dewey, DeGarmo, the McMurrays and a host of others who have imbibed, in a greater or lesser degree, something of the spirit and method of the great leader.

Today we have, especially in the realm of science and history and chiefly with reference to secondary schools, a certain recrudescence of Pestalozzian teaching in what is known as the "project method." The same principle of method was set forth in Francis W. Parker's "Quincy Methods," and later demonstrated by him in his school in Chicago first established on the Mrs. Emmons Blaine Foundation but later transferred to the City Normal School where he became principal of that institution. In this field he had the hearty cooperation of Wilbur S. Jackman. His work has been followed up in a very practical way by Miss Flora J. Cook, an ardent disciple of Col. Parker, and is now embodied in the work of The Francis W. Parker School, Webster Avenue, Chicago.

Dr. Dewey's School, established in the 90's, in connection with his work at the University of Chicago, was based on the same theories although, perhaps, lacking in some features as to practicability of management and consequent satisfactory results.

Dr. Dewey, like some other reformers, seemed not to take sufficiently into account the necessarily conventional character of a school. In the nature of things a school can not be altogether natural. It has for its task not only the progressive development of child nature but also the task of "speeding up" in the acquisitiveness of the individual. In other words a very difficult problem of the school is so to plan and execute its work as to enable the individual to overtake, in its most essential aspects, the progress of the race.

This peculiar quality of the school must have due consideration in all plans for curriculum reconstruction. Children can not be altogether "natural" in the sense that Rousseau assumed, and at the same time be educated for most effective participation in modern life.

Generally speaking the educational leaders of the United States, with but few exceptions, are essentially at one in the fundamental idea that comes to us out of all these various movements for reform. But the fact still remains that we are able to realize these in the actual practice of our schools only to a limited degree, too limited for our outstanding needs as a nation. We have thus far failed to establish a sufficiently strong sentiment to overcome the traditional school conditions set up by our grandfathers.

The opposing influences are to be found chiefly among such of our modern academics as know little and often care less about educational movements. They still seem quite content to date the inception of their pedagogical thinking back to the time and the theories of Johann Sturm. The number of these is rapidly decreasing under the influence of our rapidly developing democracy.

But herein is one great danger. This movement towards democracy, so swift and all embracing, is becoming daily more radical, while the level of intelligence and wisdom is still all too low to cope with the situation. We who are in perhaps the least danger of all nations from such radicalism should surely gird ourselves in readiness for the great social conflict that is even now staged over nearly half of all Christendom. Our schools and all means of education must be requisitioned and set in order if we are to do our part in making democracy safe for the world.

It is to meet this call to service that has prompted the action of your executive committee in inviting such a discussion of the great problem of readjustment as set forth in our 1918 program.

Our young men who have gone on the great crusade across seas have been required, on setting forth, to take out of their equipment every article that was not absolutely essential so as to reduce their equipment to fighting conditions. May we not catch a suggestion from this as we enter upon this

campaign for better school conditions? The sector to which circumstances have assigned us is Illinois schools. Let us take account of stock as to our educational notions, beliefs and practices and cast out all non-essentials in order to prepare ourselves to come to grips with those things only that are vitally essential remaining in our educational packs.

After the presentation of the above paper the chairman suggested that a nominating committee be appointed to name such committees as might seem necessary to the carrying forward of the proposed investigations.

On motion it was voted that the executive committee of the Conference with the addition of President L. C. Lord of Charleston, Principal L. W. Smith of Harvey, and Assistant Superintendent J. E. Armstrong of Chicago constitute such committee, and that this committee should decide what special committees should be chosen, and report at the Saturday morning session.

The session then adjourned.

3. Friday Evening

The Friday evening general Session opened with a rare musical treat by the University Women's Glee Club under the direction of Professor Erb.

The Director of the Conference, presiding, next presented Dean W. W. Charters as the speaker of the evening. The subject was **"What Has Thus Far Been Accomplished and Is Now Available for the Readjustment of School Curricula."** Dean Charters spoke as follows:

The Definition of Curriculum

The word, curriculum, derived from the Latin curriculus—a course, race course—has come in the American high school to mean " a group of subjects systematically arranged for any pupil or set of pupils." One or more curricula constitute the program of studies of a school. Courses or units are organized into curricula and the totality of courses and of curricula constitute the program of studies of any high school.

But co-incidentally with the use of this meaning, the term is being used in a much more loose, and, also, fundamental sense. The terms, course, curriculum, and program of studies, pre-suppose a subject matter of instruction carefully divided into subjects and parts of subjects and these units systematically arranged to meet the needs of students in the form of curricula and programs of studies.

But it has become necessary to examine the validity of the current content of these courses to discover whether they are at all the appropriate units of instruction and whether, if they are, the content is wisely selected for purposes of instruction. Are the accepted units in algebra, English composition, mechanical drawing, agriculture, or physics, appropriate for high school instruction and, if so, is the accepted content of each course wisely selected and organized for instructional purposes? Is anything unnecessary included? Are all important units included? Should the units be amalgamated into more general units—as a general biological science in place of botany, zoology and physiology or a general social science be substituted for separate courses in civics, sociology, and economics? These fundamental questions which agitate

the present high school structure of courses organized into curricula require investigation in the broad fields of aims of education and the subject matter necessary for realizing these aims.

In such discussions the investigators have come to use the term, curriculum, not in the restricted meaning of a systematically arranged group of courses but in the broader meaning of a collection of human achievements selected and arranged for purposes of instruction. I shall speak of the high school curriculum, an English curriculum, a physics curriculum and shall mean merely the collection of information, habits, ideals, and skills which are necessary for the most efficient education, and I shall not be concerned with the later arrangement of this material into units or courses.

Thus, our problem in curriculum making is concerned with the study of what subject matter should be presented to high school students. This is a difficult problem. The issues are so vast, the field so crossed by tradition, the problems so complicated and indefinite, the methods of investigation so laborious, and the demand for immediate results so insistent that a group of investigators such as is present in this audience must have a high morale to carry even a portion of the problem to an established conclusion.

The Difficulties of Scientific Investigation

However, the work has to be done and it cannot be accomplished without the aid of high school teachers who need to investigate, to experiment and to verify the results of investigation and experimentation. The day has passed in which any one individual may hope to determine a curriculum in terms of his own experience and his own objectives. Aristotle was a master mind who compassed ancient science, but there is no genius who can compass modern science. For today science grows by piece and fragment. Thousands of investigators in inconspicuous laboratories are laboriously adding atoms and from their combined efforts the edifice of modern science is rising.

So in the scientific investigations of the content of the curriculum we must expect to discard our free and easy methods of meeting for a few minutes in faculty sessions and settling the matter. Individual opinion must be superseded by collective opinion and by objective and scientific methods. The recently graduated teacher who was asked on Wednesday to prepare a course of study in physiology and on Monday had it completed to his own satisfaction, must, if he uses scientific methods, be less hasty in the future and be satisfied if after a long period of investigation he can determine, not the curriculum in physiology, but the facts that should be taught about teeth. And the investigator, in addition to being humble and selecting small topics, must be prepared to do much laborious work in getting at his facts. This the educational investigator is not yet willing to do. We have used argument, theory and personal opinion as our methods of investigation so long that we balk at detailed and careful drudgery. What do we do that compares with the almost meticulous care of scientific laboratories? This was strikingly brought home to me a few weeks ago in talking with a student who in getting the atomic weight of selurium had to make many weighings of small particles in which it took five hours for the balances to come to rest in each weighing. Until we are willing to spend extended periods of time upon the problem we are to investigate the scientific study of any project will fail to produce scientifically accurate results.

These precautionary remarks are made to sober the enthusiasm of investigators; not to discourage investigation. For we have many questions of the curriculum for which even a partially accurate result is better than the present intolerable situation and, after all, it must be realized that scientific curriculum making is not more than five years old and in this pioneering stage all that can be hoped for is that investigators use all the technique available and proceed with conscientious diligence to do the best they can.

Sixty years ago when Darwin presented the origin of the species, scientific investigation began. The pioneers of evolutionary science did crude work but they did their best and their pupils have improved the method until

today we have the triumphs of modern science. Give education sixty years of such effort and it will have results as significant and perhaps as accurate. Education must have laboratories as well equipped and as generously maintained as the physical and biological sciences possess. The facilities for research in education must be as adequately supported in our great state university and institutions of other kinds and in private foundations as are the laboratories in chemistry, biology or physics and the plants in engineering and agriculture. Indeed, we may assure ourselves that this will be done as the need for it can be demonstrated on the basis of work already accomplished, important work to be done and investigators capable of doing it.

This somewhat extended introduction to the topic of the evening is inserted because all investigators must be warned that scientific curriculum making, like all science, is a combination of inspiration and perspiration before we finish.

The Necessity for the Analysis of the Aims of Education

Curricula were first used when the young were first taught. Animals lead their young through curricula. They teach, in their limited way, at least what to avoid. In the rising scale of animal intelligence we find a constantly broadening curriculum until in man the maximum of both intelligence and breadth is reached.

Man did not wait for schools in order to construct curricula. In the forest, the tree dwellers, and, on the hillside, the cave men constructed courses of study. The farmer, the fisher, the hunter, and the housewife all handed down to their children the achievements which they originated or inherited from their fathers. And they did this after a plan. They decided what their youth should know—which was largely what they found most useful. They sometimes gave it by what we now call the psychological organization because they taught it as it was needed. The bow breaks and the adult shows the boy how to mend it; the meat burns and instruction is given in roasting. And they undoubtedly introduced some of the material as a preparation for adult life, just as we do now, as when they sat around in the places of leisure and gave the boys and girls advice that would some day be useful to them.

But the plan was not a conscious one. In fact, the analysis of curriculum methods did not appear until much later, until the philosophers, as Plato, the orators, as Quintilian, and the teachers, as Pestalozzi, made their analyses. Here for the first time we find the method of curriculum making investigated and described.

Their plan as shown in educational treatises in the histories was very simple and is still used as the basis by modern investigators. It consists of three steps. First, the aim of education is determined. Second, the subject matter which will fulfill this aim is selected, and third, it is arranged in the order best fitted for mastery by the child.

The Methods of the Great Educators

One of the earliest illustrations of curriculum making is that of Plato. His aim (the first step) is to develop knowledge of the good. His curriculum (the second step) he presents in some detail and he justifies each item by arguments showing how it fulfills his aim. He thought it consisted of music, Dorian or Phrygian; mathematics—arithmetic, geometry, astronomy; literature, tragedy but not comedy (always containing only images of the "good"), rhythm and harmony and observation. But on the third point, the organization of this curriculum to meet the needs of the child, he has little to offer.

Twenty-two centuries later, Herbert Spencer defined the aim of education (the first step) as complete living. He analyzed this into five types of conduct,—self preservation, indirect self preservation, parenthood, citizenship and occupation for leisure, in the order of decreasing importance. His curriculum (the second step), which he attempted to justify as fulfilling these aims, con-

sists of physiology, reading, writing and arithmetic, physics, chemistry, biology, sociology, ethics and psychology. He, like Plato, makes no attempt to organize this material to meet the needs and ability of the child.

Rousseau, in the centuries between Plato and Spencer, defines the aim of education as follows: "The aim of education is to develop naturally the innate instincts and interests of an individual in such a way as to lead to an expansion of these natural powers in a nature which is given, not made." The curriculum necessary to carry this out he constructs in detail. It includes subject matter derived from nature (not men), the science of duty, language, Robinson Crusoe, manual labor, and so on. In addition, he describes as Spencer and Plato do not, the third step, the psychological nature of children and upon it arranges the sequence of the items in his curriculum.

What these three philosophers do, all the great educators of the past have done. They are interested first in the objectives of living. Plato says knowledge, Rousseau natural development, and Spencer presents arguments in support of complete living. But Comenius defines it as eternal happiness with God, Quintilian, the perfect orator, and Pestalozzi, the strengthening and developing of the powers of the mind.

It is not our purpose to decide between the merit of these statements. They differ partly because the objectives of one generation may not be the objectives of another. For in the republic of ancient Rome which produced Quintilian, oratory was of greater importance than in the days of Spencer, and the ideals of the exuberant science of Spencer's day does not fit our generation when social efficiency has been proclaimed as the aim of education. They differ, also, because the aim of education is so complex that no one man can see it steadily or see it whole. Spencer and Rousseau would both agree with Plato that knowledge is important and all would agree with Pestalozzi that the strengthening and development of the powers of the mind is meritorious. The difference is partly in the selection of what is of most importance—a difference in emphasis.

But while they differ thus in statement, they all take the initial step of defining some aim, whether it be knowledge or power, natural development or complete living. And this is the task, also of scientific curriculum building.

The Failure of the Great Educators

The task of scientific investigators is to do what these writers failed to do. We must also, as they did, survey our social environment as they have done and find the objectives of living—those aims which, when secured, will produce efficient and appreciative living. But we must do it more scientifically and we must go a step further and analyze these aims into their elements so that they can be used in building a curriculum. Spencer stated this analysis in his five factors but we must go beyond Spencer and make an analysis of greater detail. For when Spencer says parenthood is an aim of education, the question still remains—What are the characteristics of a good parent? Or when he says that citizenship is an important aim we have still to ask what does a good citizen do and what are the values he thinks most worth while? If we can say that a good parent must know how to feed babies, control their tempers, and make clothing for them we have our problem reduced to more usable form. For we can more easily build a curriculum on baby feeding, on temper control, and on the making of baby clothes, than upon parenthood. Or, if we could say that a good citizen has a national rather than a local viewpoint, that he studies the merits of candidates and that he is interested in factory legislation, we would then be able to prescribe curricula that would give a national viewpoint, describe how to study the merits of candidates and produce wise legislation for factory workers.

But parenthood and citizenship are not effective in curriculum building because they cannot be handled. They are too large and too indefinite in content. We all know that the admonition to a high school boy to make a

success of his life is likely to be ineffective if he is not told the objectives which, when reached, bring success. He counters with the question—What is success? and analysis by him or us is necessary before he can begin his journey toward successful life.

There are thus two principles of curriculum making which may be formulated, as follows:

First, study the life of man and determine the ultimate objectives toward which he is striving. These become the aims of education.

Second, analyze these objectives and continue the analysis until units of workable size are obtained.

The next step follows naturally from this. If we turn to our great educators we find that when the aims had been determined they proceeded to outline the subject matter which would realize those aims. We have seen that the curricula of Plato, Rousseau and Spencer each differs radically from the other because the aims are so widely separated. And variations of subject matter are evident in many other writers.

But a study of educational classics reveals this significant fact,—that once the aim has been stated, many writers are bound by tradition and the curricula presented do not differ in such striking degree as do the aims. This is significant for us in our problem for two reasons. First, it is an illustration of the fatal defect of failure to analyze the aim in sufficient detail to obtain a working unit. When Comenius says that eternal happiness with God is the aim of education he has not provided such a working unit. Eternal happiness with God is vague and indefinite. Will not mathematics, physics, religion, ethics, reading, writing, and spelling each produce this end? There is no standard available here by which to select the curriculum. Greater definiteness is necessary and this can be obtained only through the analysis of the aim.

So in the absence of this definite analysis the writer must necessarily flounder in his efforts to select material and he therefore falls back upon tradition, upon what is familiar to him, or upon his own opinion of what should go into a curriculum. There is a wide gulf fixed between the aim on the one hand and the curriculum on the other.

Consequently, we find the second significant fact that when subject matter is selected to meet the aim, the writer is unduly influenced by tradition. The subjects already taught are accepted with some eliminations and some additions. It is not canvassed in detail in the light of its usefulness in fulfilling the aim because the aim is nebulous and widely separated from the subject matter.

The Failure of Analysis by Modern Teachers

Nor is this condition peculiar to earlier ages. In fact, today high school teachers say the curriculum should fit the needs of the students. This statement is found in all books on education and is heard in all discussions of high school teachers and principals. Everybody believes it and has propounded it for a generation. But the net result is negligible. We teachers who, to hear us talk, believe this, go into the classroom and teach substantially the same material today as was taught ten years ago. Our theory is separated from our practice. We say the subject matter should fit the needs of the students but we do not make it fit.

The reasons are identical with those just outlined. We have not analyzed our aim; no one has determined what are the needs of children. And, consequently, we are forced back upon the courses taught to us and upon our personal likes and dislikes.

But if a reorganization is to be made, the teacher must first seek and find an answer to the direct question—What *are* the needs of students? And if the analysis is carried far enough we can then, but not till then, be able to decide what items of history, Latin, physics, or manual arts should be included in the curriculum.

This constant insistence upon analysis is necessary because the achievements of man which constitute the curriculum have not been worked out in a vacuum or because of indefinite aims. They have been secured by him to meet specific situations and the analysis of objectives must be continued till specific units are reached. The Fathers of Confederation were undoubtedly dominated by the ideals of democracy but when they sat in conference upon the Constitution of the United States they had to do more than deliver orations upon democracy. For them was the task of deciding what democracy meant for the union of thirteen colonies into a single federation. They had to analyze democracy into terms of state rights, and executive, legislative and judicial powers before they could accomplish their purpose. And so all human achievements have been striven for and secured.

This means in terms of our topic that the curriculum which we teach children has been worked out for specific ends, related, of course, to the major ends of life but still specific, and if there is to be a union of curriculum and aims, the aims must be analyzed until they are sufficiently fine and detailed to permit of the application of subject matter to them.

An Illustration of the Need of Analysis in Making a Spelling Curriculum

Permit me to take an illustration from the subject of spelling. Let us suppose social efficiency is set up as the aim of education. This does not tell us what words to teach in spelling. For we do not know what a socially efficient individual is. It is necessary, then, to analyze. Suppose, then, that we find that to be socially efficient, men must earn a living, be morally upright, help other people and appreciate the aesthetic. What words in spelling should we teach? Still we do not know because we do not know what spelling a man needs to earn a living, to be moral or to help other people. So we are forced to analysis again. What, for instance, is necessary to earn a living? That depends upon the occupation selected for this purpose and here, again, an analysis is necessary. Let us suppose that continued analysis shows us finally that the writing of letters is a necessary part of earning a living and that the question is again raised, What words should be taught in spelling? Still we do not know. The analysis of correspondence must be made to see what words are used. Only when we get to this point are we able to determine the words to be taught. Thus we see that such general terms as social efficiency, morality, earning a living, or communication are too far removed from spelling to make a liaison between the aim and the curriculum. For spelled words were made to convey specific meanings and until we reach in our analysis the specific purpose for which a word was made we cannot decide whether or not to include it in the curriculum.

The Third Principle

Once we have reached this point in analysis the curriculum is formed by finding what man has done to fulfill this aim. We collect the best methods of handling the situation as found in books, in laboratories, in practice and in the unrecorded experience of men. When the list of specific ends thus found to be necessary to fulfill the ends of education and of life is collected, some information of greater or less value obtained from all of these sources is at hand for handling them. When we know that pupils need to know how to bake bread, to mend screens, to add, to sing, to cure colds or to paint a landscape in oils, we can obtain it for him. The technique of collection of information (or achievements) has been worked out and is not a serious problem of curriculum making, although at times a laborious one, as teachers know who have to look up answers to problems not found in the current textbooks.

This leads us to the statement of a third principle. After the analysis of aims has been carried far enough to disclose elements of workable size, the best practice of the race in handling each should be collected.

The Selection and Arrangement of Subject Matter

We now see that it is necessary to determine the aim and select the subject matter which will fulfill this aim. But if the curriculum were left at this point, we should have a mass of achievements of stupendous dimensions such that no person could hope to have the time or ability to learn it all. Consequently, it is necessary to modify this curriculum in several ways before its introduction to children in the classroom.

In the first place, it is necessary to determine the amount of time to be spent in education and the rapidity with which children learn so that the number of items to be covered can be determined. In connection with this we must determine which items can be handled outside of school.

It is also necessary to arrange supplementary children's values in order of importance and insert them at appropriate points in the list of social values, making a composite list in order to include some human achievements such as fairy stories and children's games which rank low in the social list but high among children's life objectives.

The number of items to be taught having been determined, it is necessary to select from the possible ends to be treated, those of most importance.

This having been ascertained, it is necessary to determine the sequence in which they should be taught throughout the eight grades, the high school and beyond by reference to the psychological nature of youth.

When all this has been determined, we have the curriculum in practical form such that it can be taught by the classroom teacher, and the task of curriculum making is completed except for the constant revision that must be made from time to time.

A Summary of Rules for Curriculum Construction

We thus have seven rules for determining the curriculum:

1. First, study the life of man in its social setting and determine the ultimate objectives and continue the analysis until secondary objectives of workable size are obtained.

2. Analyze these objectives and continue the analysis until secondary objectives of workable size are obtained.

3. Arrange these in the order of importance.

4. Raise to positions of higher order in this list those objectives which are high in value for children but low in value for adults.

5. Determine the number of the most important objectives which can be handled in the time allotted to school education after deducting those which can be learned outside of school.

6. The best practice of the race in handling these objectives should be collected.

7. Arrange them in proper sequence according to the psychological nature of children.

I have no doubt that the foregoing description is quite the reverse of encouraging to an audience which is willing and anxious to undertake some studies in curriculum making. And my reason for giving such a description is that of showing just how stupendous a task the solution is.

But, fortunately, we may make any one of these six steps a subject of inquiry. The ultimate ends of American life are not easy to describe nor has the technique for their investigation been developed. The psychological factors upon which a course of study depends can be studied without determining any of the five preceding steps. Or, a subject can be selected such as mathematics, zoology or English composition and worthy objectives, commonly accepted, can be assumed and an investigation made of the items of the subject which will fulfill that purpose. Many instances of this will be given.

This procedure is entirely justified for practical purposes. We can all agree that spelling, reading, or history ought to be taught for some reason or other. If we can agree on this, we may temporarily ignore the analysis of our aims and start with history, spelling and reading, and determine (1) what our aim is in teaching it, and (2) what subject matter we need to fulfill that aim. This is the plan that has been followed in most of the studies made up to the present time.

Types of Studies in Curriculum Construction

Several types of study have been made which may be used in the high school, some in one subject and some in another. Although none of the studies which I am to describe are in any sense final, they are nevertheless significant because they represent a technique of investigation which may be used and partly because in several cases the studies have been of sufficient breadth to provide some guidance to the classroom teacher.

The Variety of Objectives in Spelling

Spelling presents a good example of studies made from the point of view of a variety of objectives. For instance, the early studies of Knowles and Eldridge assumed the objective of spelling as the *ability to read.* This when analyzed would naturally include a list of all the books in the English language which are extant, together with a determination of their vocabularies. This would, of course, be identical with the dictionary and is a futile task. So a typical selection was made, in the case of Eldridge, of one issue of the Sunday papers of Buffalo, and, in the case of Knowles, of portions of the Bible and "various authors." The latter tabulated 100,000 running words and reported a list of the 285 most frequently used.

Jones assumed the objective as ability of children to write in *school exercises.* He tabulated 15,000,000 running words from 75,000 themes of 1,000 children in several states and obtained a list of words most frequently used. He found in all 4,532 words and listed them according to the grade in which they first appeared. The second grade used 1927 words and approximately 400 new words were added in each succeeding grade to the eighth.

Ayres and Cook and O'Shea assumed the objective as *adult* ability to write and on that basis made an analysis of business and personal letters.

Woolfalk, on the other hand, based a study on the *errors* that children make in spelling, assuming that many words would take care of themselves and would not need to be included in the spelling curriculum.

These studies, while they show the variety of objectives of spelling and assume different objectives stating that the reason for teaching spelling is to be able to read, is for children to write correctly, for adults to write correctly and for children to correct their errors, they all agree in using frequency as a basis. The greater the frequency the greater the importance but they differ in significant particulars. The ability to read is a quite different objective from the ability to write. The vocabulary of children is quite significantly different from the vocabulary of adults and the error vocabulary does not nearly coincide with the use vocabulary. For instance, the most frequently used words are *the, and, of,* etc., while the most frequently misspelled words are, *which, separate, there and their,* etc.

But it must be reiterated that an open-minded investigator would not object to the investigation of the effect of different objectives upon the curriculum, and it must be acknowledged that practical good has accrued to the spelling curriculum from this variety.

Frequency of Error as a Basis of Selection

I have referred to the distinction between the frequency of error as bases for emphasis in the curriculum. I shall now mention a few other studies based

upon the frequency of error conception. One study was made in grammar in which it was assumed that the grammar objective in the grades is the correction of the grammatical errors of children. This was analyzed by listing the oral and written errors of the children of one city and later extended to those of the children of several cities. Then these errors, of which there were many thousand, were classified according to the rules broken, and a grammar curriculum consisting of the rules necessary to understand them, was constructed.

In spelling, Capps collected all the errors made by 70 pupils in a high school during the year and obtained a list of words, arranged in order of frequency of error, to be used as a basis for high school spelling in that school.

In manual arts, Fuller assumed the purpose to be the making of repairs about the house and found the most common to be putting up clothes lines, tightening screws in furniture, and papering rooms. Other frequently mentioned items were, reseating chairs, adjusting sewing machines, stopping rat holes, mending window shades, and adjusting doors, none of which are taught in a manual arts course. Upon the basis of these he determined what the total processes were which needed to be taught in a manual arts course and obtained their relative frequency of use.

In physical education, Todd determined the physical defects of the boys of a high school and constructed a curriculum composed of correctives for these defects.

All these studies are made on the theory that the curriculum should be constructed on "the shortcomings of individuals after they have had all that can be given by undirected training." That this is the preferable method we are not certain at this time, but it is interesting to note that Bobbitt in his recent book makes it his fundamental principle. And its advantages and possibilities justify more elaborate discussion than the limits of this paper will permit.

Common Opinion as a Method of Determining Content

Another method of analysis of objectives is that of selecting subject matter on the basis of the common opinion of those engaged in using practical applications. Wilson and others attempted to determine the curriculum in arithmetic by collecting the opinions of business men as to which of the operations are of greater and less use in their businesses. These studies show where, in the opinion of the business men of the community, the greatest emphasis should be placed and where eliminations and additions might occur. Such methods should be used with the greatest caution because of the difficulty of obtaining the real judgments of practical men, who, being untrained in this sort of analysis are likely to make snap judgments.

A more careful study in this method was made by a committee of the Iowa State Teachers' Association which collected 5,036 problems in arithmetic reported upon by mature adults as having been met by them in their work. Reports were received from 457 persons, 41 per cent of whom were housekeepers. These problems were solved and the arithmetical processes used were tabulated and they show, among other things, that only simple operations are used and that the most frequently mentioned items were the four fundamental operations, fractions, United States money, accounts, percentage, buying and selling. It shows, also, the greatest use of these problems was made in connection with groceries, dry goods, fuel, labor, meat and clothing (probably due to the 41 per cent of women reporting).

Camerer has determined what bankers think should be known about banking by depositors, with a view to teaching this in the schools.

Another appeal to the cumulated opinion of individuals is made by Bagley in defining the objectives of American history.

All such appeals to the opinions of others must be conducted with unusual care to make certain that the real opinion is being recorded. It is doubtful if one can safely use any known device less laborious than that of the oral questionnaire. That is, the questionnaire should be prepared but the answers should

be recorded by the investigator himself in an interview with the one questioned. The written questionnaire upon matters of opinion has been found to be unreliable and the saving in time is not justified because of the inaccuracy of the results.

The Use of One Subject in Another School Subject

Another type of study seeks to determine the content of one subject by its use in another school subject. Horn attempted to determine what history is referred to in descriptions of certain crucial social problems. He selected certain books which contained discussions of these problems and determined the percentage of historical material, its nature, the dates, and historical characters referred to in the books.

Mr. Williams of this University is now engaged upon finding what mathematics is used in a freshman college text in chemistry by listing mathematical terms and solving the problems involving arithmetic.

Partial studies of the technical terms used in Federal Farmers' Bulletins have been made to determine what sort of vocabulary a farmer is supposed to have in order to read the bulletins intelligently. Other partial studies involving the use of arithmetic in home economics, especially in sewing, by the analysis of particular texts have been made.

The Analysis of Technical Processes as a Method

Another type of study has to do with industrial processes. Stimson and others have analyzed farm processes such as the raising of ducks. The objective of duck raising is stated, as economy of production, and the analysis is carried on by listing the problems—such as choosing the breed, location of plant, housing, supplying water, etc. Then the best processes of carrying these on is collected as a curriculum and there is added the reasons for the processes. We find in these three items a good classification of subject matter,—the problems encountered, the processes involved in solving these problems and the principles upon which the processes are based. This gives a textbook startlingly different from the current high school agriculture text. And it should be pointed out that this method provides a means for determining what zoology and botany is necessary in agriculture; for among the principles upon which the procedure depends will be listed botanical and zoological facts.

The Emergency Fleet Corporation has done extended work upon the analysis of trades, some of which is published. The Bureau of Labor has carried on and published extensive studies of a similar sort. The industries have been compelled to make these studies because they were, in their own language, "up against it." They had to take good mechanics with little schooling and make teachers out of them. It, therefore, became necessary for them to give specific detailed instruction and thereby they have made a significant contribution to education which can be used to advantage by many better trained teachers.

The essential factors in this method are the determination of the objectives and the detailed analysis of the job. Similar studies may be made in laboratory technic in the sciences, in supervised study, typewriting and stenography, cooking and sewing, in English composition, in manual arts, in music and in physical education.

Curricula Based on Analysis of Community Activities

Another type of study is that found in the social sciences in which the curriculum is based on the social activities and problems of the community. This is the essential method of the community civics curriculum. The assumption in such a curriculum is that the understanding of and participation in the social activities of the local community is an essential quality of a good citizen. The method of procedure is to list the community activities as (following an unpublished report by Oppenheimer) public health, protection of life and

property, charity, civic beauty, recreation, industrial and labor problems, education, migration, etc. The scientific method of determining the analysis has not been worked out, but should consist in an objective study of a community with verification of the list by independent or supplementary investigations by others. These items should be analyzed into steps involved in each. For instance, civic beauty is obtained by a series of jobs, such as keeping paper off the streets, mowing lawns, planting trees, etc. Once these jobs have been listed, the curriculum would consist of information upon these points and practice in the technique of doing them.

This resumé of studies made is presented for the purpose of suggesting the problems which members of the Conference may use in their subjects to see if they are at all applicable. The studies are crude and partial, but they are the best we have, and, being such, they are worthy of temporary use until better ones are constructed. Indeed, if a completely adequate technique is developed in a generation we shall be much more fortunate than the other sciences have been.

A Plan for the Conference

May I in closing suggest a method of procedure for those departments which are interested in the subject of reconstruction of the curriculum?

I suggest that the College of Education collect at once duplicate reports of the significant investigations made and that it classify the methods used. Co-incident with this, the department chairmen may select some well-trained teacher or committee interested in this type of work to make a study of this material. Then at the meeting next fall, one session or part of a session of such sections as wish to participate may be spent (1) in hearing a review of this material, and (2) in deciding upon a list of problems for investigation and study during the next and succeeding years. This may, also, be supplemented by reports now being made by members of the Conference.

There is no occasion to hurry or to loiter. The task is here to be done and, in the last analysis, practical schoolmen who are interested in the job must perform their part of the task.

4. Saturday Morning Session

At the Saturday morning general session, with the Director of the Conference presiding, the first item of business was the report of the nominating committee appointed at the Thursday evening session. The chairman of the committee placed in nomination the following committees:

1. As a central committee to have general direction of investigations and to visé reports—
   Dean W. W. Charters,
   Dr. B. R. Buckingham,
   Professor H. A. Hollister, Chairman.
2. Committee on Teacher Training—
   President David Felmley, Normal, Chairman,
   Professor J. A. Stevenson, University,
   Principal P. M. Watson, Robinson,
   Superintendent I. M. Allen, Springfield.
3. Committee on Continuation and Part Time Schools—
   Superintendent J. Stanley Brown, Joliet, Chairman,
   Assistant Superintendent W. M. Roberts, Chicago,
   Professor C. E. Bennett, Peoria.

4. Committee on All-year Schools—
   Professor A. W. Nolan, University, Chairman,
   Supervisor J. Calvin Hanna, Springfield,
   Principal C. P. Briggs, Rockford.
5. Committee on Compulsory Attendance and Economically Incompetent Families—
   Principal John E. Miller, E. St. Louis, Chairman,
   R. C. Moore, Carlinville,
   Superintendent L. A. Mahoney, Moline,
   Principal W. N. Brown, Peoria,
   Superintendent G. P. Randle, Danville.
6. Committee on Extension of Community High Schools, Transportation, and Economic High School—
   Principal L. W. Smith, Harvey, Chairman,
   Principal T. J. McCormack, La Salle,
   Principal J. L. Thalman, Maywood,
   Principal W. E. Andrews, Pana,
   Superintendent J. O. Engleman, Decatur.

On motion the report of the nominating committee was approved and the committees elected as named.

Opportunity was then given for Professor J. E. Stout, Director of the Junior Red Cross, Central Division, to present the aims of that department of the Red Cross organization. Professor Stout spoke as follows:

Ladies and Gentlemen:

I think perhaps I can best introduce the child by referring to the parent. I need not explain at all concerning the American Red Cross to this audience. The Junior Red Cross is an activity carried on by the American Red Cross in the American schools. As a matter of fact, there isn't any organization known as the Junior Red Cross organization. We have junior members of the American Red Cross and every child who is a member of a school auxiliary of the American Red Cross is a member of the American Red Cross. There isn't any junior membership except in that sense.

You all know the purposes of the American Red Cross. It does not differ in the school from what we find it everywhere else. Its purpose is social service and its leaders about a year ago conceived the notion that it might render a social service through the schools in two ways: In the first place, it could tie the children of America up to a great social organization which was thought worth while. In the second place, it could give the children something worth while to do in connection with the war.

Someone has asked whether the Junior Red Cross will continue now that the war has ceased. That can be answered only by asking if the American Red Cross will cease. We have information that the American Red Cross will put on a Victory Program following the war even greater than the war program and, if that is done, it will continue in the work provided people want the work continued.

Its work is training in social service; its purpose is to assist the schools in giving social training to the children of America. Now we know we have been talking a great deal about socializing education for a number of years. We have undertaken to do that through movements in the school, so the Red Cross proposes education in the school and social training is to come through

that organization and through an educational program which the Red Cross proposes. That program is to emphasize three things, and I think that you will all agree these things have social value. The first of these is health, looked at from both individual and social points of view; the second is production; and the third is thrift. * * *

We have had a number of inquiries made as to whether this program is to continue, and my answer is that it will continue until notice is received from the American Red Cross to discontinue.

We have working arrangements with health authorities of Illinois now. We have a working arrangement whereby you will not need to multiply movements in your schools. Miss Osborne, the field representative of the Anti-Tuberculosis Association, is also now the representative of the Junior Red Cross and she is authorized to organize school auxiliaries and to carry on the work of the American Red Cross in the schools. Our director of the American Red Cross in the school districts is Dr. Downing. He has already gotten out one bulletin, which is receiving very favorable notice in the schools and other bulletins will follow, dealing with the health problem from the individual and also from the social standpoint. A manual has just been issued containing material relating to thrift and health and production in regard to civic affairs.

Now in a word this is the program of the American Red Cross working through the schools. If you want this organization, this school auxiliary, to take over activities that have been carried on under other agencies, we will be glad to make the necessary arrangement with your school. We shall be very glad to furnish material and suggestions from our standpoint for the carrying on of this work. An advisory committee is now being formed in this State and would have been organized several weeks ago if schools had not been closed. It will consist entirely of school people for the purpose of helping direct this work.

The great problems of reconstruction are before you and those problems do not have all to do with those across the sea. Make the world safe for democracy and make democracy fit to lead the world in the greater problems of reconstruction. We shall have to depend largely upon our public schools to solve that problem. The American Red Cross will be willing to co-operate with you through the schools in helping toward such a solution.

A call then came from the audience for Superintendent W. A. Greeson of Grand Rapids, Michigan, who had presented a paper on Friday before the Joint Session of Language Groups. Superintendent Greeson responded, in substance, as follows:

I really don't know what I could say to add to the occasion. I wonder if you care to know about something in which I have been very much interested, in Grand Rapids, in the way of trying to get a very thorough knowledge of the actual number, age, residence of all the children in the city of which I am the superintendent.

For many years I have been conscious of the fact that the school authorities did not actually know the facts about the children in the city. It has never been put on a very thorough and genuinely business-like basis. Now, I think one of the fundamental things in any enterprise is to know the facts. That is one of the first things; to know the facts as they actually exist. I know it has been true of my own city—I think it is equally true of most other cities—that the census, the school census, has not been very thoroughly taken. And I think it is true not only of Grand Rapids, but of most other cities in the United States, that the school authorities not only do not know the facts about the children in the city, or the state, or the country for that matter, but they have not been very thorough in the question of getting all the children into the schools and knowing where they are, what they are doing, all about them. I know that in Grand Rapids the census was taken in a rather perfunctory way,

largely for the purpose of drawing money from the State, so much per capita, whatever that allotment might happen to be, and when that was done, the school authorities did not pay very much attention to the matter. In other words, school attendance has largely been voluntary.

For a good many years in Grand Rapids, I have been working on that question of, first, obtaining a very thorough census and, secondly, of making that census a continuing census so that at any time, at any day, any one who had any business to know about it could know the facts about the children in the city, who they were, where they lived, whether they were in school or not. In other words, I tried to actually put into operation a thorough census system.

One of the first things to do, I decided, and I think that the experience has proved the value of that, is to make the census a continuing census, not a spasdomic one, not to simply go over the city in a rather perfunctory way once a year, put down and tabulate the facts about the children in that city as obtained from that census and then forget it for another year.

In Grand Rapids, then, we devised a card system, making the family the unit, devising a card which would show the facts about a family in as usable a way as possible, and keeping those cards from year to year, the same cards. When a family moves, we have means of finding out that fact as soon as possible and the card is transferred to the proper place so that it can be found. When schools open in the fall of each year, I have issued to all the schools, both public and private and parochial, cards which are already printed and furnished to them without any trouble on their part, to show promptly when schools open, the presence in each school of the children who are in the schools. I have succeeded in getting the co-operation of all the parochial schools and the private schools in the city and, quite promptly when the schools open in the fall, a card is returned to the Attendance Department, showing the presence of the child in the school. Those cards are checked up with the census quite promptly and where there is any difference, where the checking shows the absence of any family, or any child in the family, from the schools, the Attendance Department gets busy and finds out why those children are not in school.

That system has been in operation now for about three years. I find that the results are very satisfactory indeed. Not only are we succeeding in getting the children in school quite promptly, but we are finding out a great many things which we did not know before, and doing it promptly so that neglect and carelessness on the part of families—and there will always be such families in every community—is cared for quite promptly until they are gotten into school.

One of the concomitant benefits coming from this system I have found to be this—the active and cordial co-operation of all the school forces of the town. I have discovered that the parochial schools, of which we have a very great many in Grand Rapids, have worked with the public school officials very cordially and, as I said before, one of the results of the system has been to develop a spirit of co-operation among all the educational forces of the city, which I have found to be very satisfactory and, I think, very beneficial.

Now, I have no doubt that many of you, possibly all of you, have been quite as interested in this matter as I have been, but I thought possibly it might not be out of the way for me to speak briefly of this matter in Grand Rapids. I do think it of very great importance in any city that the educational forces of the city should be brought into co-operation as promptly as possible so that all the children of all the people shall be given the opportunity to participate in the educational advantages of that city.

Member in audience: May I ask a question or two? Would you mind telling us what machinery you operate in order to keep track of the families that move?

Mr. Greeson: That is one of the most difficult things that I have found. I do not think, Mr. Armstrong, that we have succeeded very completely in keeping track of the families as they move. There is a great deal of moving in

Grand Rapids, as I think probable in every other city. I will speak of two or three things that we do. In the first place, the teachers in all the schools of the city, both parochial and public, are requested to report promptly to the Attendance Department whenever they find any family has moved; whenever a family that has been going to a particular school moves to another part of the city, they are requested and urged to report promptly to the Attendance Department the fact that that family has moved. And when a new family comes into a district, as soon as the children appear in a new school, that fact is reported. The city law with us is to this effect, that any moving company is required to report the fact when a family has been moved and the Census Department checks up with the reports turned in by the moving companies.

I have been wondering if it would be possible to get the co-operation of the Police Department. I have never done that. I would like to ask if any of you have ever done that—gotten the co-operation of the Police Department to report to the school authorities whenever people move? (No answer.)

Have any of you found it possible to get the Post Office Department to co-operate in giving information? I have thought that, if it would be possible to work it out, we might find that very valuable. I do not know whether it is possible or not.

Member in audience: You would have to get a special order from Washington in order to do that.

Mr. Greeson: Would that be possible, do you think?

Member in audience: I doubt it.

Member in audience: I would like to ask if, in taking care of your attendance problem, you regard the state law of Michigan in regard to compulsory education as sufficient or insufficient.

Mr. Greeson: Briefly the law is this: All children must go to school in Michigan until sixteen years of age, or until they have completed the eighth grade. That is the Compulsory Attendance Law. The Labor Law, however, says that no child may receive a permit to work under fifteen years of age. Now the Compulsory Education Law further says that if a child has completed the eighth grade and is not yet sixteen, he must be either in school (says nothing about the grade) or lawfully employed. The working out of the law is different, I think, from the intent of the law when it was put upon the statute book. But the working out of the law is this, that every child must be in school until sixteen years of age, regardless of the grade in which the child may be. The average age in completing the eighth grade in Grand Rapids—and I think this also is quite general in most of the cities of the United States—if fifteen years and over, which means that when the Compulsory Education Law and the Labor Law are enforced children will complete the ninth grade.

As to your question therefore, I think that on the whole the laws in Michigan are very good. I find that there is a good deal of sentiment in Michigan looking towards making the age sixteen and compelling all children to go to school until sixteen. I have my doubts as to the desirability of such a law because there are many children who, in my opinion, are better off in every way at work than in school, who are fifteen years of age, and I should hesitate to advocate passing a compulsory education law compelling all children to go to school until sixteen years of age. I think on the whole the laws of Michigan are quite satisfactory.

The leading speaker of the morning, Mr. E. E. McNary, Superintendent of Training, United States Shipping Board Emergency Fleet Corporation, of Philadelphia was introduced. His theme was **"Training Men to Build a Bridge of Ships."** Mr. McNary spoke without

notes and with the aid of a very enlightening series of lantern slides. The substance of his address was as follows:

Fellow teachers:

I hope I may use that term because a year and a half ago I was a perfectly contented teacher on a regular school job. I was pulled up by the roots and put on a new job, and I want to tell you about that. So long as Mr. Hollister has made all the apologies, I will go right to the thing in hand.

A year ago in August I happened to be in Washington and Admiral Boles, who was the Chief of Construction for the Emergency Fleet Corporation, sent for me. He asked me to take charge of the training of shipyard workers. He indicated that there were then about 50,000 shipyard workers employed in the United States and that we would have to multiply our shipping policy tenfold. I told him I had another job and did not think it was right to take this. He said: "We can't win this war without ships, and we can't build ships without men and men can't build ships without training. The winning of this war depends upon an effective plan of training industrial workers." Here was a case where the school man was called in to help win this war. The war has done a great deal to call attention to what the schools can do, not only in an emergency, but in any big movement that includes the whole country. I felt when Admiral Boles put that up to me that there was simply nothing else for me to do but make the attempt.

I want to confess to you that for about two weeks after I was put on that job, every time I would think of the immensity of it and the importance of it, it would give me a feeling of nausea, but as soon as I could get a plan worked out and had begun on it, it was simply a problem of pushing ahead each step. There was the thought that the winning of the war depended on increasing tenfold the work of the industrial shipyard.

The plan that was put up to Admiral Boles was something like this: The only man that could train other men to build ships was a man who could build ships himself. We can't take teachers who don't know ships and put them in shipyards to build ships. In this war emergency, there was no time, we said, for false motions or ineffective work. If these skilled men were going to be instructors, they must be *skilled* instructors as well as skilled mechanics. But rarely is the skilled worker a skilled instructor. They tell us teachers are born, but an institution like this indicates there is something else to be done besides *raising* teachers. So it was proposed that the shipyards pick out from their working force some of their best and most skilled workmen—men that were most likely to make good instructors—men with patience, that were leaders of other men, thoroughly knowing their trade, and respected by other workmen as knowing their jobs. In spite of the fact that the shipyards needed every skilled man they had at their command, they were asked to pick out these men and set them aside for a while to be given intensive training in how to give instruction in their trades to other men. After these men received their training as teachers, they were to go to their own yards and there instruct men in their own trades.

It was recognized that they would have three kinds of jobs to do:

(1) That if each yard had to expand to such a large extent, men already on the working force would have to be raised in supervision so that they could direct the newcomers. That meant trade improvement of many already on the working force as the first job of these trained instructors.

(2) There were men coming in from the allied industries to work in the shipyards—the trained house builder, the machinist, the automobile man, the structural steel man—brought in to lend their part in building this large program of ships. So that here was a problem of transferring or of converting skill from a kindred trade to one of the shipyard trade.

(3) Men coming in without any trade or mechanical experience to work out their part in the shipbuilding program.

Those three types of jobs have been carried out by instructors that we have trained.

When I put that program up to Admiral Boles, he said: "That is a good program. Go ahead and carry it out."

But I wanted first to check it up with the managers of some of these yards which had been in existence for a long while, to see if they could punch any holes in my work before I started. I never had any selling experience, never thought I would make a salesman, but I was filled with this idea that the Admiral had given to me—that this program had got to win in order to win this war. So, regardless of what I could do I was made to feel this was something I had to do.

You can imagine how I felt in putting up this program to a long-headed, hard-headed shipbuilder, who had never thought of any such thing as training men to teach others their trades. I went to the manager of a shipyard. He wanted to tell me about the difficulties he was having with the Shipping Board I was representing. How they had taken over his contracts and told him to go ahead on he didn't know what basis. The Emergency Fleet Corporation had taken over everything, had as yet made no reimbursements, and he did not know how he was going to be paid. I had to listen to all this story; it gave me the kind of start I really didn't want to have in putting up this kind of proposition. But he told his story and then I had my opportunity.

As soon as I started, he said, "Mr. McNary, tell me how many years you have worked in a shipyard." I said, "I don't want to show anybody how to build ships. Give me a man who does know how to build ships and in a little while I will train him so he can show others how to build ships and in the best possible way." He said, "That's a damn good idea! They know their trade, but they don't know how to show others how to do it."

So up and down the coast, I had to drag myself to put this up to shipbuilders. They recognized at once that I was a school man with a new kind of notion.

I remember going down to a yard to talk to the president at a time there were strikes in neighboring yards. "You are from the Shipping Board, are ye?" he said, and told me the troubles he had had with the Board. I said, "I have a new problem to put up to you," and proceeded to outline my plan. He said, "Before talking about training help, you had better talk about keeping help." He said he was very busy and I went away, returning to see him later. The clerk said the president was sorry but had to catch the next boat for Washington. I said, "Good, so do I." I met him on the boat and that evening asked him if he was willing to talk shop outside of business hours. About half past twelve that night he was still holding on to me and insisting that I bring that scheme to his yard. It finally resulted in bringing the system to Newport News.

There were eighteen yards I visited and those yards were represented at Newport News when we opened up training for instructors.

I would like to tell you something about how we trained these instructors.

This is really a rough-neck type of job. What would English teachers think when they came in contact with a shipyard worker? The shipyard has a language of its own. In talking about shipyard work, I will have to do considerable deleting.

There is something fascinating about shipyard work. It seems a tremendous task to build a big ship. No mystery, but simply the organization of a large number of men and variety of occupations for a common purpose, to bring about the launching on many occasions of these big ships. I was more than impressed by the attitude of these managers. One of them said, "Our business interests have all gone to pot, but we're going ahead and we are going to build ships." And that is what they have been doing.

(Here Mr. McNary showed slides illustrating the construction of a ship.)

I told you how I went from yard to yard to induce some of the shipyards to pick out the skilled men and send them for instruction. They said they would, but you can imagine how uncertain we felt the first day to see whether these men really would come. We had eighteen yards represented with about eighty-five men. The group grew until we had 150 men in February. These instructors will each train about 150 men in a year's time, some more, some less, taking about four weeks average time for the training of a group of workers.

I want to give you a little idea of the kind of job it was to train these men; how these red-blooded, active workers were to be brought about to conceive some notion of effective methods of giving instruction. We couldn't tell them about Pestalozzi and Rousseau and these other men that we value to study and hear about. We couldn't talk about pedagogy, psychology, and education. We had to deal in concrete terms, but these men had an appreciation of the principles we put up that compares very favorably with the appreciation usually shown in the average professional school. I want to say that the intelligent workman has the brains and intelligence to appreciate what effective teaching means as well as any one else. People say these men can't appreciate it because they haven't had the theory, but they know the difference between a poor job and a good job.

We had an organized scheme. The thing was carried out according to a plan that would take into account the very principles they were using every day in their work. The material was drawn up in three pamphlets: one on the analysis of the trade; the second on the methods of instruction; and the third, the management of instruction.

We tried to follow in our course the very principles on which we asked these men to work when they started as trained workers in the yard. We started on the principle that we must start with something the man knows. We asked the man to take his own trade and analyze it by jobs and by operations —to work out that analysis in the order in which it was carried out in the field. He was familiar with his trade, but was very unfamiliar with working out an analysis. Many times I heard the men say, "I thought I knew my trade but I was never able to put it down in any order like this." Series of forms were devised for guiding these men in working out their problems, fifty-eight of them. Each man was first asked to do some simple things and then by degrees going on to more complex things.

Then there were various supplementary subjects we took up, for instance, the care of tools. Here we have care of tools while in use, care when not in use, prevention of loss, etc.

Each man worked out his own problems in an individual way. These groups of instructors did not represent a *single* trade. We usually found it better to have a *combination* of various shipyard workers, each working out his problem in a class group in his own way.

Another thing they worked out was danger—danger to self and to others, what the dangers were and their causes. These differ very materially in the various trades represented in the shipyard.

We did not stop to give these men a course in mechanical drawing; we did not show them how to teach a course in mechanical drawing. But in the case where it was very necessary that a man know how to read a complicated mechanical drawing, he was shown what is done with the drawing and the purpose for which the thing is done. If the man only needed to know how to read a blueprint, then he only organized his work to do that thing. This was a war emergency course; we went only into the factors involved and eliminated all else.

The first part was to analyze his trade; the second part was to teach him how to put his instruction over to the learner. First, men would give each other instruction, picking out simple lessons and giving simple points to others in the group. Finally it resulted in a man taking a complicated form and carefully preparing five lesson plans and giving those lessons in the yard.

Men were found who needed that particular lesson in the yard and the lesson would be given under these conditions.

To come back to the analysis again—after that second part of instruction was given, the shipyard teacher had a great deal of appreciation, not only of how to give instruction but also of the order in which to give instruction. He then revised his teaching in what we know as the effective instruction order. The order taken in industry is not always the most effective way we can teach the green worker. The production order in teaching reading is to learn the alphabet, learn words, and then sentences. We don't follow the production order in teaching shipbuilding today. The simplest thing is done first. A man found out first what the various kinds of difficulties in his trade were, then stages were laid out to mark those difficulties.

In the same way he had to recognize the organization under which the yards worked. Shipbuilding is largely done in gangs; that had to be taken into consideration in planning the work of the gang.

When the course was completed, each man had laid out the jobs on cards, each operation carefully worked out in detail. Then the cards were filled in order of simple job to maximum of skill. He was ready with this revised analysis to teach the different operations and if a man needed one thing or another, he was ready to go out and do it.

Now these instructors had one more part of the course—instructional management under shipyard conditions. We said that these trades would have to be taught on the job, that is on the ship and in the shop; that it was not practical to train a riveter in the school but on actual ship work under actual working conditions. That increased the problem of teacher training. It is quite different having students scattered all over the ship, as the bolting-up instructor will have, from meeting a class in the classroom. They need to be carefully checked up and guided. Now instructional management under those conditions differs somewhat and is somewhat more complicated than management of a class-room group. The fourth part of the course trained the men in meeting this problem. So he went out in the shipyard where the training was being conducted and took charge for a time of some of these shipyard groups. The instructor becomes really an instructing foreman in the yard when he completes his course.

PART II
SOCIAL EVENTS

The chief social feature of the Conference is, perhaps, always that which goes on between sessions in the hotel lobbies, at various special dinner groups, and as the teachers go and come.

The function of a formal nature was the usual reception to the teachers given at the Woman's Building, 4:30 to 6:30 Friday afternoon. At this function Miss Josie Houchens of the Library School arranged the social features and Miss Taylor of the Household Science Department superintended the serving of refreshments.

Other interesting social features were the visit to the new education building, the luncheon of the Principals' Association, and the smoker for members of Phi Delta Kappa at the University Club.

PART III
JOINT SESSIONS

A special feature of the Conference this year was the joint session planned by each of two important section groups by the interlocking committees. These were the Language Groups, including English, Modern Languages and Classics; and the Science Groups, including Agriculture, Biology, Domestic Science, Geography and Physical Science.

1. Joint Session of the Language Groups

The Session was opened with a few very appropriate remarks by the presiding officer, Dean Kendric C. Babcock, of the College of Liberal Arts and Sciences of the University of Illinois. He drew especial attention to the importance of the composite nature of the work of the Committee and considered it a hopeful sign that in the relations between the high schools and the university, between the various language departments, there should be such an inter-locking committee for the purpose of coordinating more closely the work of these various departments and of the various types of schools represented. Professor Fitz-Gerald then presented the Report of the Inter-Locking Committee on the Coordination of Language Study in the High Schools of the State of Illinois.

Report of the Interlocking Committee on the Coordination of Language Study for the High Schools of Illinois

A synopsis of our report was recently sent out to the various principals with the request that it be placed in the hands of the English and Foreign Language teachers. As the first two recommendations set down therein are to be treated by specialists in today's program, we shall limit ourselves to repeating them as originally propounded, and then proceed at once to consideration of the other recommendations, concerning which we hope to have special reports at subsequent High School Conferences.

A recommendation to the language teachers of the State that in all language classes a distinct effort be made to coordinate the roots of the various languages taught in the school. For example, the Latin teacher will, to a greater extent than has hitherto been the case, call the pupils' attention to the similarity of roots not only in English and Latin but also in French and Spanish. In the same way the English teacher will remind the pupils that certain English words are not so very different in appearance from Spanish, French or Latin words.

A recommendation that supervised study be adopted as soon as possible for all language courses, so that the study of languages may be placed upon a veritable laboratory basis. This recommendation would naturally be coupled

with a recommendation made some years ago at a high school conference to the effect that language classes be limited to a maximum registration of twenty pupils.

The third recommendation was to the effect that where two year high schools now exist junior high schools be at once created by transferring from the grade school administration to the high school administration the seventh and eighth grades, thus strengthening those particular schools both financially and otherwise. This recommendation will require action by the State Legislature. But, such action can be obtained only by creating an enlightened public opinion in support thereof. The financial strengthening mentioned would be brought about in one of two ways. In certain districts, the money at present apportioned to the work of the seventh and eighth grades would go over to the high school budget with the transfer of the grades. The high school principal, in acquiring these additional grades, would not be obliged to secure a budget equal to the entire cost of these grades, but only the relatively small sum that would represent the difference between the budget transferred to him with the grades and the somewhat higher salaries that he would have to pay his teachers to handle these grades. In other districts, where the grade-school budget is strained to the breaking point by its effort to carry the eight grades, the transfer of the seventh and eighth grades to the high school administration, *without transfer of budget,* would be a distinct relief. The high school in these same districts would frequently be able to ask for an increased high-school levy on the ground of its having a four year course instead of merely two years.

In passing, your Committee wishes to state that in using the term Junior High School, it does not mean necessarily nor exclusively the seventh and eighth grades taken as a unit, nor the seventh, eighth and ninth grades so taken. In other words, our interest is not in seeing our sub-collegiate schooling divided administratively into a primary school of six years plus an intermediate school of two years plus a secondary school of four years; nor in seeing a division 6+3+3. But, we are interested in seeing our sub-collegiate schooling divided administratively into two large, well-coordinated groups: 6+6. Even under this plan it may very well happen that in certain high school districts there will be, in addition to the main school with its six grades, certain outlying feeders each under the immediate care of an assistant-principal, which will have only the seventh and eighth, or the seventh, eighth and ninth grades. But, they will all form part of the single administrative unit of six years under the general control of the principal.

This will make for a more consistent and harmonious choice in the studies of the curriculum of the secondary school.

Your Committee, appointed in the fall of 1916, has been considering many of the same problems that were studied by a committee of distinguished British scholars, which was appointed by Prime Minister Asquith in 1916. The British committee's report has just been published and contains much food for thought. Before proceeding with our own report we wish to quote a few of the most significant passages of the British report.

MODERN LANGUAGE STUDY IN GREAT BRITAIN

Report of a British Committee Appointed in 1916 by Prime Minister Asquith

No country can afford to rely on its domestic stores of knowledge. The whole civilized world is a cooperative manufactory of knowledge. In science, technical and pure, in history, antiquities, law, politics, economics, philosophy, new researches are constantly leading to new discoveries, new and fruitful ideas are giving new pointers to thought, new applications of old principles are being made, old stores are being rearranged, classified, and made available for new purposes. In this work all the civilized countries of the world collaborate, and in no branch of knowledge, abstract or concrete, disinterested or applied to the uses of man, can the specialist neglect the work of foreign students. To

obtain access to these sources of knowledge some languages are more useful than others, but many have at least a limited utility. The knowledge contributed by foreigners to the common store is useful to commerce and industry, but most of all it is needed in the universities which have all learning for their province.

* * * * * *

The war has made this people conscious of its ignorance of foreign countries and their peoples. A democratic government requires an instructed people, and for the first time this people is desirous of instruction. Such instruction can not in the nature of things be universal; it must proceed from the more instructed to the more ignorant. It can not be said that before the war knowledge of foreign countries and their people was sufficient in ministers, politicians, journalists, civil servants, university professors, schoolmasters, men of business, or in any class of those whose function it is to instruct or guide the public. Further, those few who had important knowledge to impart found no well-informed and interested public to take up and spread this information. Thus the masses and the classes alike were ignorant to the point of public danger.

Ignorance of Foreign Peoples a National Peril

Ignorance of the mental attitude and aspersions of the German people may not have been the cause of the war; it certainly prevented due preparation and hampered our efforts after the war had begun; it still darkens our counsels. Similar ignorance of France, greater ignorance of Italy, abysmal ignorance of Russia have impeded the effective prosecution of the war, and will impede friendly and cooperative action after the war is over. We need a higher level of instruction in those whose duty it is to enlighten us; we need a far greater public well informed and eager to understand; we need in all some interpenetration of knowledge and insight. The gradual dissipation of national ignorance is the greatest aim of modern studies. They can only work through the few to the many, through the many to the multitude. But neither the higher instruction of the few, nor the broader instruction of the many, nor the dissemination of sound views in the multitude, can be safely neglected in a democratic country. In this field modern studies are not a mere source of profit, not only a means of obtaining knowledge, nor an instrument of culture; they are a national necessity.

For the acquisition of sound knowledge of any foreign country a speaking knowledge of the language is the first necessity. Hundreds of thousands of British citizens traveled in France before the war; but only a minimal percentage got any knowledge of the French people, because the others could not converse with the inhabitants in their own language. Of those who knew the language only a fraction had the historical and literary knowledge and the general enlightenment to make the best use of foreign travel and residence. Here also many must be instructed in order that a few may make good. Speaking is indispensible for this purpose, but reading is also necessary.

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England and the World, Debtors to France

The importance of any language may be judged by the significance of its people in the development of modern civilization, by the intrinsic value of its literature, by its contribution to the valid learning of our times, and by its practical use in commercial and other national intercourse. French is by far the most important language in the history of modern civilization. France was ahead of Italy in the medieval revival of learning. The University of Paris was the chief source of light to Europe from the days of Abelard for three hundred years. Italy took the lead in that later revival which is known as the Renaissance, and when she fell a victim to the discordant political ambitions of foreign powers, of the Papacy, and of her own princelings, it was France who with her help carried on the great tradition.

The continued progress of France was never arrested by civil discord, by unlimited autocracy, or even by the convulsive crisis of her great Revolution.

For three hundred years France was the acknowledged leader of Europe in the arts, sciences, and the fashions. In literature alone among the arts has she an equal or a superior in England. In the actual bulk and volume of her scientific work France may, during the last half century, have fallen behind Germany, but by vivifying and pregnant ideas she has made the whole world her debtor, and in the lucidity and logical consistency of her interpretation of life she has no rival.

We are her debtors above all other peoples, for England was during four centuries the pupil, and afterwards the enemy and rival, but always in some degree under the influence of France. Even for practical purposes the great majority of our witnesses give France the first place. Not only is French the language of diplomatic intercourse, but in countries where English has not established itself French is found most commonly useful as an intermediary between any two persons of different nationality. Physical propinquity also gives French a special value for Englishmen; and recent calamities confronted and endured together should create an eternal bond of sympathy between the two nations.

Fundamental diversity of character and temperament render mutual comprehension difficult, but once established it should serve to correct some of our national defects. In mere matter of language as in other things, the two nations seem destined to serve as complimentary one to the other. Our careless articulation may be corrected by the precise and studied utterance of the French, our modes of written expression might gain much from study of the perspicuous phrasing, logical construction and harmonious proportions of their prose. From every point of view French is, for us, above all, the most important of living tongues; it has, and it should retain, the first place in our schools and universities.

Your Committee has been carrying on its studies concerning foreign languages in much the same spirit. We realize that the British Committee's report is, in many respects, quite as applicable to the United States as it is to the British Empire. Our interest, or apparent interest, in modern foreign languages has been greater than that of the British; but the reasons for that interest have not always been sound whether looked at from the standpoint of education or from that of the good of the country. We hold no brief against the teaching of German, but we cannot help admitting our conviction that by and large German was taught to an extent that went proportionately far beyond what the country's best interests would have required. Recently the University of Illinois received from the Superintendent of Public Instruction of a large city a request that we accept in lieu of and on a par with our present foreign language entrance requirements an equal amount of Polish, Lithuanian, and Italian. This request did not answer a need of the country. It answered, rather, a need for getting votes in certain wards of that city in support of a certain person then in the educational lime-light of that city. Contrast this attitude (of both the public officer and the voters) with that of Professor Carlo Leonardo Speranza and his son, Gino Speranza, both of New York. Instead of urging the Italians of New York to demand that Italian be taught in the schools of that city, these two gentlemen for years and years conducted night-school classes in English for recently arrived Italians, so that their former compatriots might as speedily as possible become Americanized in thought, speech, spirit and action.

As one of the results of the Great War we believe that our people are now ready to be shown in what direction their real interests lie, in this and kindred matters of education. But they will need to be shown, and we must be prepared to make our demonstration frankly and unhesitatingly if we would carry conviction. We shall be assailed on all sides by those who would make our future education ultra-practical. In this connection we should do well to bear in mind a bit of information recently given us by a member of the British Educational Mission to the United States. In speaking of the British Continuation Schools for Adults, he remarked that in only a very small percentage

of cases were the courses of study offered such as would increase directly the wage-earning capacity of the student. The leaders were not trying to make these adult students better specialists in their chosen trades or professions. On the contrary, they were trying to enrich their lives by giving them sound courses in history, art, economics, literature and so on. These courses are given in non-technical language by specialists, and they are so planned that the students are encouraged to continue with the same subject or subjects for a sequence of two or three years. As you will note, they are trying to help these persons to have something better than the movie-habit for the recreation of their leisure hours. We should lay this lesson to heart, and be constantly on our guard against those who would make the curricula for our future studies too mercenarily practical.

We have tried, as has already been said, to approach our problems in the same spirit that inspired the British Committee. We know that many of our own educators and leaders of thought recognize the same indebtedness to French that was so clearly set forth in the report just quoted. We know, too, that many of the leading thinkers in the Americas to the South of us recognize that same indebtedness. Neither they nor we, however, can make use of the argument about physical propinquity as a defense for our interest in French. Nevertheless, the physical propinquity argument is perfectly sound in principle. Leaders of thought in the three Americas have applied it to conditions that confront us in the Western Hemisphere; and while the specific conclusions reached in the various countries differ, they all conform to the principle. It must be admitted, however, that our Spanish-American neighbors have been in this respect considerably more consistent and harmonious in their conclusions than have we.

As long ago as 1914 the editor of *La Prensa* in Buenos Aires recommended to a delegation of North-American university men and school men that we preach in season and out of season the necessity of teaching in North-American institutions of learning the language, literature, history, institutions, and culture not only of Spain, but of Spain's eighteen daughters in the new world; and he pointed with satisfaction to the fact that he had for years been carrying on in his paper a similar campaign in favor of teaching in Spanish-American schools the language, literature, history, institutions and culture not only of England, but also of England's great daughter, the United States; and he promised us that he would continue the campaign.

In the early months of 1916 Professor Gálvez of the University of Chile made a tour of many American universities. In all of them he carried on a similar campaign. At the University of Illinois his address was entitled, "Removing the Barrier of Language." He delivered this address without notes, and in brilliant English, so that he was an example of his own preaching.

In all the South American countries that your Chairman visited in 1914 he found many, many examples of persons who spoke English, and understood our viewpoint so well that they were first class examples of the thing they were preaching. And it should be borne in mind that I am not speaking of professional linguists. Quite the contrary. The men I have in mind are specialists in education, publicists, jurisconsults, doctors, dentists, scientists, and agriculturists.

These general ideas of which I have been speaking were specifically set forth in Articles 15, 16 and 17 of the Final Act of the Second Pan American Scientific Congress, which Final Act was unanimously approved by all the delegates from the twenty-one countries represented.

Final Act of Second Pan American Scientific Congress

Article 15

The Second Pan American Scientific Congress believes it to be important that—

The achievements and influence of the founders of the independence of the American Republics be made known to the peoples thereof, and

that the important details of the lives of the liberators and statesmen of the continent be included in courses of study in schools of the American Republics.

Article 16

The Second Pan American Scientific Congress recommends that—

There be established in the universities of the United States chairs of the history, development, and ideals of the Latin-American peoples, and in the universities of the Latin-America chairs of the history, development, and ideals of the people of the United States.

Article 17

The Second Pan American Scientific Congress urgently recommends that—

Spanish be taught more generally in the schools, colleges, and universities of the United States and that English be taught more generally in the educational institutions of the Latin-American Republics, and that both languages be taught from the point of view of American life, literature, history, and social institutions.

Furthermore there has recently appeared an account of an important move on the part of the United States Section of the International High Commission. It is as follows:

The United States Section of the International High Commission, recognizing the primary relation of a knowledge of languages to the free, ready, and constant interchange of thought between different peoples, resolved:

I. That, in order to develop closer commercial and social intercourse between the countries embraced in the International Union of American States, provision should be made in the high schools as well as in the higher institutions of learning in the United States for competent instruction in the Portuguese and Spanish languages;

II. That it is desirable that special courses should be established for the education of persons to act as the representatives of United States business interests in the other American Republics;

III. That the secretary of the section is requested to forward a copy of this resolution to the Commissioner of Education of the United States and to the commissioners of education of the several States.

With all these facts before us, and after having made a careful study of the programs of various schools in England, on the Continent, and in several of the most progressive countries in South America, with particular attention to such schools as have made a specialty of foreign language work, we submit our fourth, fifth, sixth, and seventh recommendations.

The fourth and fifth recommendations are to the effect that where junior high schools have already been established, so that we may count upon the advantages of a six year high school program, the foreign language sequence in the college preparatory course be as follows: Spanish, Latin, French, and German. Where the standard four year high school is concerned the language sequence for the college preparatory course shall be: Spanish, Latin and French.

The object of the foregoing recommendations is to secure homogeneity in the language preparation of the pupils in each and every language class. This is in harmony with the universal practice abroad.

The sixth and seventh recommendations are to the effect that, for the six year nonpreparatory course the language sequence be Spanish, French, and German. Similarly in the four year nonpreparatory curriculum the language sequence shall be Spanish and French.

These four recommendations are set forth more in detail in the four accompanying schedules for the four-year and the six-year programs of both the college-preparatory and the non-college-preparatory curricula. To them are

appended the schedules of the Perse School in Cambridge, England, and of the Austrian Reform-Realgymnasien. In the curricula of both types of school a modern foreign language (a form of modern Latin) has been treated to a considerable extent before beginning Latin. We could also have quoted some of the South American programs to the same purpose. The two that are presented have been in successful operation for more than ten years each, and can no longer be said to be in the experimental stage.

In working out our four proposed schedules we took as a basis a school day of 12 thirty-five minute periods, such as that in use at the Joliet Township High School. But whereas the Joliet Township High School treats its school day as being composed of 4 double-periods, and 4 single periods (one of the latter of which is for lunch), we have proposed a school day of 5 double-periods and 2 single periods (one of the latter of which is for lunch). As the school week contains 60 thirty-five minute periods, we have set down for each subject the number of single periods per week that will be devoted to it. All study-subjects, however, are treated on the double-period basis.

One may very well ask why we put Spanish as the first foreign language to be studied when the two special types of school to which we refer place French in that position, and when the British Committee which studied the same problem that we have been studying, and whose report we have quoted at such length, likewise placed French in the foremost position.

The principle underlying the curricula of the two types of school to which we have referred is that a modern Latin language is a good introduction to the study of Latin itself, in addition to the fact that the modern language has an interest that is more alive. Dr. Rouse, who is the Director of the Perse School, is also a Latinist, and his belief in the recommended sequence, coupled with his modified use of the direct method in all foreign-language instruction, is embodied in his official statement that:

"The general result is that the Sixth Form attains the usual scholarship standard, but at a comparatively small cost of time, and with unimpaired freshness of interest. Thus a boy of sixteen under this system attains better results in Latin after 540 school hours, than he does under the current system after 2160 school hours."

The paramount principle underlying the report of the British Committee was the discovery of what is best for the British peoples. That same principle applied to our problems, with our intimate association with the eighteen Spanish-speaking nations of the Western Hemisphere (to say nothing of our relations with their Mother-land, Spain), has led us to put Spanish in the first place, and French in the second place (among modern languages), whereas for obvious reasons of geographical propinquity, the British Committee placed German in the second place among modern languages. But Britain has not our Inter-American problem to face, nor have we Britain's physical propinquity to Germany. For these reasons, as well as for those of the reciprocity involved in the recommendations of the Second Pan American Scientific Congress, we have indicated Spanish as the foreign language that all the rising generation of Young America should study carefully as its first foreign language. There are also some purely administrative reasons:

Placing Spanish as the first language in the six year curriculum will disrupt the existing sequence (or lack of sequence) less than any other arrangement. Furthermore, even in the four year high schools the placing of Spanish in the position indicated would not be a very disturbing element since so many schools have not yet reached a full four year program in any language.

Your Committee recognize unanimously that the English used by our college-students is by and large deplorable. It is with that in mind that we make our eighth recommendation, to the effect that serious effort be made to improve the English in Normal School and College classes of prospective teachers, to the end that a generation hence the pupils coming from the high schools to

College Preparatory

Four-year Curriculum

Grade	English Subjects	Natural Sciences	History	Lunch Singing Drawing Gymnastics Etc.	Mathematics	Spanish	Latin	French
9 Age 14-15	10	10	10	Lunch 5 5	10	10	..	..
10 Age 15-16	10	6	4	Lunch 5 5	10	10	10	..
11 Age 16-17	10	..	4	Lunch 5 5	6	10	10	10
12 Age 17-18	10	..	6	Lunch 5 5	4	10	10	10
Totals ..	40	16	24	Lunch 20 20	30	40	30	20

English 40 — Non-Language Studies 90 — Foreign-Language 90

Lunch 20

Six-year Curriculum

Grade	English	Natural Science	History	Lunch, etc.	Mathematics	Spanish	Latin	French	German
7 Age 12-13 ...	10	10	10	Lunch 5 5	10	10	..	..	..
8 Age 13-14 ...	10	10	10	Lunch 5 5	10	10	..	..	..
9 Age 14-15 ...	10	6	4	Lunch 5 5	10	10	10	..	..
10 Age 15-16 ...	10	..	..	Lunch 5 5	10	10	10	10	..
11 Age 16-17 ...	10	..	..	Lunch 5 5	..	10	10	10	10
12 Age 17-18 ...	10	..	..	Lunch 5 5	..	10	10	10	10
Totals	60	26	24	Lunch 30 30	40	60	40	30	20

English 60 — Non-Language Studies 120 — Foreign-Language Studies 150

Lunch 30

Non-College Preparatory

Four-year Curriculum

Grade	English Subjects	Natural Sciences	History	Lunch Singing Drawing Gymnastics	Mathematics	Other Subjects	Spanish	French
9 Age 14-15	10	..	..	Lunch 5 5	..	..	10	..
10 Age 15-16	10	..	..	Lunch 5 5	..	..	10	..
11 Age 16-17	10	..	..	Lunch 5 5	..	..	10	10
12 Age 17-18	10	..	..	Lunch 5 5	..	..	10	10
	—	—	—	20	—	—	—	—
Totals ...	40	..	..	Lunch 20	..	..	40	20

English 40 — Non-Language Study 120 (Lunch 20) — Foreign Languages 60

Six-year Curriculum

Grade	English	Natural Science	History	Lunch, etc.	Mathematics	Other Subj.	Spanish	French	German
7 Age 12-13 ...	10	..	..	Lunch 5 5	..	..	10	..	..
8 Age 13-14 ...	10	..	..	Lunch 5 5	..	..	10	..	..
9 Age 14-15 ...	10	..	..	Lunch 5 5	..	..	10	10	..
10 Age 15-16 ...	10	..	..	Lunch 5 5	..	..	10	10	..
11 Age 16-17 ...	10	..	..	Lunch 5 5	..	..	10	10	10
12 Age 17-18 ...	10	..	..	Lunch 5 5	..	..	10	10	10
	—	—	—	Lunch 30	—	—	—	—	—
Totals	60	..	..	30	..	..	60	40	20

English 60 — Non-Language Study 150 — Foreign-Language Study 120

Curriculum of the Perse School, Cambridge, England

36 lessons in the week, each 45 min. (except in the first stages, when they are shorter)

	English Subjects	Mathematics	Nat. Hist. or Science	Drawing Singing Modeling	French	Latin	Greek	German
Before 9	24	6	2	4	..	..	..	..
9-12	18	6	2	4	6	..	..	..
12-14	12	6	4	2	6	6	..	..
14-16	6	6	4	2	6	6	6*	6*
16-19	6	(Special work in any subject, 26)						4**

* Alternatives.
** For those who took Greek earlier.

Austrian-Reform-Realgymnasium

Subject	1	2	3	4	5	6	7	8	Total
Religion	2	2	2	2	2	2	2	1	15
German	4	4	4	4	3	3	3	3	28
French	6	5	4	4	3	3	3	3	31
Latin	..	..	..	..	7	7	8	8	30
History	2	2	2	2	3	3	3	3	20
Geography	2	2	2	2	1	1	1	..	11
Mathematics	3	3	3	4	3	3	3	2	24
Natural History, etc.....	2	2	..	..	3	3	..	2	12
Chemistry	..	..	..	3	..	..	4	4	11
Physics	..	..	3	2	..	..	..	..	5
Geometrical Drawing	..	2	2	3	..	..	..	..	7
Free-hand Drawing	4	4	4	3	2	2	..	..	19
Philosophical Propædeutics ...	..	..	..	..	..	..	1	2	3
Chirography	1	..	..	..	..	..	..	..	1
Gymnastics	2	2	2	2	2	2	2	2	16
Total	28	28	28	31	29	29	30	30	

the colleges may possess a greater mastery of English than is at present the case. One means to this end would be the adoption even in Normal Schools of a modified form of supervised study in all subjects. This would mean that the prospective teachers would be kept more constantly in contact with their own teachers, whose English is presumably better than that of their pupils. These pupils (the aforesaid prospective teachers) would thus become better masters of English.

Committee
- John Calvin Hanna, *State Supervisor of High Schools, Springfield.*
- Florence Skeffington, *Professor of English, Normal School, Charleston.*
- John D. Fitz-Gerald, Chairman, *Professor of Spanish, University of Illinois.*

The Committee's report was received without discussion with the understanding that it would come up for discussion next year. The next paper on the program was **"Supervised and Directed Study"** by

Principal J. Stanley Brown, of the Joliet Township High School and Junior College.

Supervised and Directed Study

Educational process is unfixed; it is mutable, unconfined, independent, fluidic; it partakes of these qualities because of the force with which it has to deal. Applied to the schools and colleges, its quantitative element is largest apparently in the realm of intellect. Its qualitative force will be greatest in its effect on the individual as a whole. The process of instruction involves the instructor and the individual to be instructed. There is demanded here a mutuality of effort if the resultant receives either temporary or permanent approval of the participants.

Long before Jesus trod the soil of Galilee, and unceasingly down through the centuries, men have sought untiringly to improve education, instruction, and teaching. The residuum of theories, which for their time met approval and were thought to contribute something permanent, has been brought together from age to age and made a part of a fusion of a new process somewhat unlike either of the elements fused, but, in a measure, has met in a more acceptable way the newer conditions presented.

The adoption of universal education in the United States of America long before many of the much older civilizations developed under different conditions conceived or thought of such an idea, has hastened the training for teaching and has produced in our public mind the desire for thoroughly trained teachers.

Because men and women have appreciated the necessity of trained teachers, even though the training had to be in the great majority of cases outside of an institution designated for the training of teachers, there has been a constant effort, a constant study, and may we say, a constant improvement in the relationship between the teacher and the student. We have tried the short school day in secondary education, the period given up to study for all at the beginning of the day, the conference either in the middle of the day or at the close, the assignment of work to be done at home without direction, the keeping of students as a kind of penalty after the great majority had gone to their homes, and many other projects designed to help in the teaching process.

Among the latest of these efforts at securing a closer, a warmer, a more sympathetic and, in many cases a more magnetic relationship between the teacher and the student or pupil is "supervised and directed study." We are not attempting to define this as by a dictionary definition. It represents a method of instruction, a scheme of teaching which is based upon a mutual relationship, a mutual obligation existing between the two parties concerned.

We are applying this method of instruction to all kinds of language work, our native tongue and our foreign tongues. We are, however, persuaded that its application is as defensible in all subjects when sanely and thoughtfully applied. It forever condemns to the scrap-heap of discarded pedagogy such expressions as "hearing the recitation," "hearing a class," "mere question and answer" when teacher and class have come together. Its application is not the same in any two different subjects; hence, every subject to which it is applied must interpret the method in the interest of the subject and not the subject in the interest of the method. It means a longer school day; it means a larger expense; it means a smaller number of unsuccessful pupils; it means a larger percentage of pupils to continue their work for a longer time; it means that the educational expense attached to this method of teaching is almost offset by the smaller number of repeaters from semester to semester.

The relationship between the teacher and the class takes largely the nature of a conference in which all participate; difficulties presented are discussed in the open; the interest created in the first half of the period may be culminated to magnify the interest in the second half of the period. The keyed-up condition, which ought to be general in the conduct of a class after the first twenty

or thirty minutes, may be skillfully used without cessation of interest in the continuation of the conference between the teacher and the pupil.

Directed study means the appropriation of the positive, the constructive; and the minimizing of the negative and the destructive in the conference group of teacher and class to do, to build, to think, to act, to construct, to produce such a group and such conditions seem to us far more vital than to memorize and to reproduce or recite what has been prepared to show that it has been prepared. The examination of subject-matter through common conference and discussion is made not only possible but is made the core and heart of this kind of educational and instructional effort. The atmosphere of the group created by a common interest in the whole discussion and conference frees the group from the lassitude and indifference many times found when the teacher "hears a recitation," directs a question to an individual and gets the response from the individual. The individual in turn, when he has performed his part of what is called the recitation is inclined to be easy for the rest of the hour in the thought that his performance is ended and that he is but an observer for the remainder of the time.

Initiative may be cultivated in the extreme in well-directed study because of the stimulus which comes from the consideration of the entire matter before the group and not from the small consideration given to an individualized question concerned with only a part of the complete topic under discussion. Reproducing has its main value in the earlier years of the educational process when the power to think is undeveloped and where the power to reproduce may tend to stimulate and develop the power to think. But certainly at the secondary school period the power of initiative, the ability to think independently is either in its inception or at a more advanced stage of development and ought to be carefully directed, encouraged, and developed.

Let no one suppose that supervised and directed study may find its satisfaction at all in the large study hall over which some teacher is placed for the purpose of keeping the room in order and looking after the details of the discipline of the room. In a broad sense there is a kind of supervision but it can never have any direct relation or application to supervised and directed study by the teacher especially prepared to do a limited field of work. It is clear that no individual teacher would attempt to direct and supervise six or eight different fields of work which might be represented in the group in the large assembly hall. The most that can be done under such circumstances is not individualized at all, either in subject-matter or in class direction. Everything which savors of a pure mechanical performance; everything which savors of the deadness of routine; everything which savors of the "letter that killeth" will be eliminated when a real teacher magnetically in sympathy with the group under his care uses the first few minutes of the conference to enthuse the pupils and illuminate the topic for general consideration and then assists, by guidance only, the unfolding of all the difficulties presented and enlists a unity of attention and a warmth of interest literally irresistible.

One subject in the curriculum is as vital and as important as another; one subject ought to be assigned on the daily schedule as much time as another subject. It is clear to me that all linguistic work, whether native or foreign born, whether the mother tongue or the great great grandmother tongue, whether in secondary school or college, ought to be granted the same consideration in time as any other subject in the curriculum, the same chance for conference and production, the same chance for a kind of laboratory consideration for class and student present, the same opportunity to confer, to construct, to criticize, to develop, to produce, to do through the process of guidance and directed thinking their examination of subject-matter. In my judgment, it is an error to presume that guidance belongs to the vocation only and not the whole field of education. Educational guidance through directed and supervised study may produce as happy and satisfactory results, yea, will produce both happy and satisfactory results when the individual who guides and directs is saturated with the subject-matter under consideration, is obsessed with the best in sociology,

psychology, ethics, and pedagogy. In this sort of a conference and consideration of the topics at hand all the best thought of the entire group may be put into the crucible during the conference, criticism and debate, and when the whole mass has been fused through the heat of interest and enthusiasm, there will come to all individuals of the group a resultant, under the guidance of the director of the group, and such resultant will be far superior to any which might ever come from a perfect recitation heard by a teacher when every question propounded has been answered correctly. The one showed the satisfaction which may come from the expression of mechanical fact; the other the inspiration and enthusiasm which come from the approval of the entire group. Even the individual student placed in the group of the latter kind is led to use his powers to the utmost while in the other group he has to be driven to secure the use of his powers to the minimum.

Under the stimulus of such a conference, influenced by the keenest, concentrated attention, the educational process will develop a brain-power keener and keener day by day and the ability to grapple successfully on a new problem or a new question will be developed.

Directed and well-controlled study produces a kind of independent thinking and induces unpropped effort. The individual under the influence of the group learns to stand alone, think alone, act alone, and ultimately to initiate alone.

The contrast between the mere "question and answer" method of conducting a class is as definitely estimated as that between the husk and the kernel. Each may have some function but the power and the vital force lies in the kernel itself rather than in the husk.

The conference group, teacher and class, are enabled from meeting to meeting to act as appraisers of their own efforts. They are easily able to detect the spurious and cast it out, to determine the genuine and retain it. A combination of judgment, including the entire group, director and directed, means an up-to-date advance of the level of attention and effort day by day.

In the manufacturing world the proudest records have been made through intensified cooperation. Sometimes we have called it "efficiency." The group concerned with directed study forms the most defensible example of cooperation yet developed in the field of education. The contrast between this and the old type of recitation with question and answer may be seen if we think of the one as a cooperative group synchronized in the solution of a problem; the other as an isolated individualized group attempting to solve the same problem. Working together we reach the all-inclusive goal; working separately we attain an exclusive individualized goal.

As twentieth century team work or a great constructive force brought to bear on a single point wins, so directed study controlling the large group and bringing to bear all its power on a single topic under discussion will meet the twentieth century standard of education.

Following Principal Brown's paper there was a paper on **"Coordination of the Teaching of Foreign Languages and of English in the High Schools,"** by Superintendent Wm. A. Greeson, of Grand Rapids, Michigan.

I have a feeling that I am appearing before you under false pretenses. I am supposed to discuss the correlation of the teaching of English with the teaching of modern languages when as a matter of fact what I shall say will be on the subject of teaching English in the seventh and eighth grades through the medium of Latin. However, I presented the case honestly and fairly to Mr. Hollister and he graciously consented to my appearing before you to discuss the subject on your program, although I shall have very little to say about any other foreign language than Latin.

Some years ago the head of the Latin department of the Central High school was in my office. When we had finished the discussion of the subject in hand I began the discussion of a subject which I had been thinking about for many years. I said to Miss Jones:

"I can take an average class in seventh and eighth grades for two years in technical English grammer, approaching this subject through the medium of Latin. After two years this class will know more English grammar, will have a better vocabulary and will be able to use the English language more accurately than another class taught in the usual way. In addition to this they will have done the first year of high school Latin better than is usually done by classes that begin Latin in the ninth grade."

Miss Jones said:

"If you can do it, I can do it, and I should like to have the opportunity to try it out."

Accordingly I arranged for her to have a section in English grammar in the Junior High school, which she taught by approaching the subject of English grammar through the Latin.

EXHIBIT A

Three years ago Prof. M. R. Trabue of Columbia University gave a test in English in a great many schools throughout the United States. This was what is known as a "substitution test." The test was one in the ability of students to use their vocabulary quickly, accurately and meaningly. Here is a typical sentence:

"It is very ———— to become acquainted ———— persons who ———— timid."

The results of this test are very interesting. The eighth grade group of Junior High school of Grand Rapids, Michigan, was first, securing a score of 30.1 out of a possible 48 points. The seventh grade group of Grand Rapids Junior High school was sixth, having a total of 28.8 out of a possible 48. An interesting fact to be noted is that in the eighth grade there was one class which had had one semester of Latin-English and that it was the score made by this group which brought up the average of all the other eighth grade classes in the Junior High school so that it was enabled to win first place.

Another interesting fact is that the lowest score made by any member of this class was equal to the median score of the 8-1 class just below it. To quote from Prof. Trabue:

"The Latin-English class stands very high in the test, the poorest score in this group being equal to the median score of the 8-1 class just below it. We have found this test correlating very highly with every measure or estimate of linguistic and general ability."

This test seems to prove conclusively that the pupils in the Latin-English class knew how to use their English correctly, had a better vocabulary and were more correct in the use of it than those in any other group.

It would be advisable to admit here that this section showing such excellent results in this test, was a picked section in that the pupils chose to study Latin and very naturally the better endowed pupils would be the ones to choose this subject.

I have some evidence, however, to give you from one of our schools in Grand Rapids in which English grammar is taught through the Latin to *all* the pupils of the school in the seventh and eighth grades. This is the Sigsbee school, a large school of about 900 pupils, grades kindergarten to eighth. It is not a junior high school although the seventh and eighth grades are organized departmentally. It happened that one of the teachers in this building was an enthusiastic student of Latin and also a good teacher, a college graduate who has had long experience in teaching both Latin and English grammar. I think I should not advise superintendents to try the experiment of compelling all their seventh and eighth grade pupils to study Latin or rather to study their English via Latin. However, in this school the experiment has proved to be very successful and is still in operation. The success of the experiment I attribute largely to the fact that the teacher—Mrs Emma Scott, is a woman of unusual ability as a teacher and her skill in teaching and her influence on the school has made it possible, with the cordial cooperation of the principal, Mrs. Josephine A. Goss,

to succeed in the difficult task. It is a difficult task to persuade not only the pupils but the parents of the pupils—all the parents of all the pupils—that the study of Latin is useful to their youngsters. In this school Latin is taught with a distinct purpose in view, namely, to enable them to understand their English grammar and to give them an insight into the derivation of a great many words in the English language. Pupils who finish the eighth grade go from this school to the Central High school in the ninth grade, at least they did so at the time of which I am telling you, although at present the pupils from this school pass through the ninth grade in the Junior High school, going to the Central High school when they reach the tenth grade.

I am able to give you an interesting study of the records of pupils in Central High school made two years ago, and have classified them as you see, both as to their rating in English and as to their rating in Latin, separating them into three classes:

1st—Those who had Latin in Junior High school in seventh and eighth grades;

2nd—Those who had no Latin in grades seven and eight, and

3rd—Those who are from Sigsbee school, all of which had Latin in seventh and eighth grades. Here is the exhibit:

EXHIBIT B

Rating of Pupils in Central High School at the Close of the First Semester of the Current Year

Ninth Grade

	Rating in English	25 had Latin in Junior High in Grades 7 and 8	81 had no Latin in Grades 7 and 8	66 had Latin in Sigsbee in Grades 7 and 8
9-1	G or above	92%	36 %	27.3%
	F to F+	8%	33.3%	33.3%
	75 to 79	0%	17.2%	28.8%
	Below 75	0%	13.5%	10.6%
	Rating in Latin	**19 had Latin in Junior High in Grades 7 and 8**	**27 had no Latin in Grades 7 and 8**	**37 had Latin in Sigsbee in Grades 7 and 8**
9-2	G or above	42 %	37%	40.5%
	F to F+	37 %	37%	24.3%
	75 to 79	10.5%	0%	0 %
	Below 75	10.5%	26%	35.1%

Tenth Grade

	Rating in English	35 had Latin in Junior High in Grades 7 and 8	236 had no Latin in Grades 7 and 8	19 had Latin in Sigsbee in Grades 7 and 8
10-1	G or above	42.9%	24.5%	42.1%
	F to F+	31.4%	34.8%	10.5%
	75 to 79	17.1%	23.3%	31.6%
	Below 75	8.6%	17.4%	15.8%
	Rating in Latin	**23 had Latin in Junior High in Grades 7 and 8**	**72 had no Latin in Grades 7 and 8**	**13 had Latin in Sigsbee in Grades 7 and 8**
10-2	G or above	30.4%	30.6%	46.2%
	F to F+	30.1%	30.6%	23 %
	75 to 79	17.4%	11.1%	15.4%
	Below 75	13.1%	27.7%	15.4%

Eleventh Grade

	Rating in English	24 had Latin in Junior High in Grades 7 and 8	254 had no Latin in Grades 7 and 8
11-1	G or above	54.2%	34.3%
	F to F+	29.2%	29.1%
	75 to 79	8.3%	18.1%
	Below 75	8.3%	18.5%

NOTE:
(a) All pupils from Sigsbee School had Latin in Grades 7 & 8

	Rating in Latin	9 had Latin in Junior High in Grades 7 and 8	97 had no Latin in Grades 7 and 8
11-2	G or above	66.7%	45.4%
	F to F+	0 %	26.8%
	75 to 79	11.1%	9.3%
	Below 75	22.2%	18.5%

(b) The pupils in Junior High School who had Latin in Grades 7 and 8 were selected for ability.

It is easy to see the remarkable superiority of pupils from the Junior High school who had Latin in the seventh and eighth grades. Of course this is to be accounted for, to some extent at least, by the fact that here we have a picked lot of pupils; but even so the superiority of this group is very remarkable. As one would expect in examining a comparatively small group of pupils, there are many inconsistencies: For instance, in the 9-1 grade all pupils from Sigsbee school, all of whom had Latin in seventh and eighth grades, are inferior to the pupils from other schools who had no Latin in grades seven and eight. In the 9-2 grade, however, more pupils from Sigsbee are rated "G" or above than of the pupils who have had no Latin. On the other hand, a larger percent stand below 75 than of the other group. In the 10-1 grade the Sigsbee pupils are decidedly superior to the no-Latin group and the same is true of the 10-2 group. In fact, in the 10-2 group a larger percentage of pupils from Sigsbee school had "G" or above than of the picked group from the Junior High school who had Latin in grades seven and eight. In the eleventh grade there were no pupils from Sigsbee who had Latin in grades seven and eight because Latin was introduced into Sigsbee school only two years before this investigation was made. As one would expect to find, the Latin pupils from the Junior High were very superior to the no-Latin group.

I have still another exhibit, which we might call exhibit "C", and this test has just been finished; in fact, the report was handed to me just before I left Grand Rapids for Urbana. The following table shows the results of a comparative study of 212 Junior High school pupils in respect to their knowledge of technical English grammar and the meaning of words. Of these 212, 158 of them had had no Latin at all or had just started it. Fifty-four of these pupils had had Latin ranging from one semester in a few cases to two years in many cases. The object of this study was to find out whether those who had studied Latin under what we term our Latin-English course had a better knowledge of technical English grammar and had a better vocabulary than those who had taken the regular English work. The table below shows the results in detail.

	No. pupils tested	Parts of speech	Cases	Tenses & Modes	Vocab-ulary
Standard scores		36	20	20	x
Junior High pupils who have had Latin..	14	39	27	20	49
Sigsbee school pupils who have had Latin	40	36.50	*15	17	47
Those who have not had Latin.....	*158	35.33	20	16.79	09.44

Let me first describe these tests. There were four of them.

First, to test their knowledge of the parts of speech. This is a standardized test, the standard score being 36. A printed selection of English was placed

before the pupils with abbreviations of the parts of speech printed on the same page. Instructions were printed on the back of the sheet and the test consisted in telling what part of speech each word is. In this test you will see that the Junior High pupils who had had Latin stood three above the standard score; Sigsbee pupils who had had Latin stood ½ point above the standard score; while pupils who had not had Latin—158 of them—fell .67 of a point below the standard score, which is not bad.

The second test was designed to test the knowledge of cases. A selection of English was printed on a sheet of paper and they were told to write the abbreviation of the case under each noun and pronoun. The exhibit here is not so beautiful as I could wish but I must be honest and state facts as they are. Pupils who had Latin in the Junior High school in seventh and eighth grades stood seven points above the standard score. Pupils who had had no Latin just equaled the standard score, while our Sigsbee pupils fell down. I do not know how to account for this but I am going to look into it. I think that the explanation is as follows: Pupils in the Sigsbee school have been taught to give Latin names to the cases. They talk about the dative and the ablative and the genitive cases and when this test was given to them, calling only for the nominative, possessive and objective, I think the pupils were confused and did not know what to make of it. Parenthetically I may say here that in my opinion one of the greatest, one of the most crying needs in education at present, is for a concensus of opinion and practice in grammatical nomenclature in all languages.

The third test was designed to find out how much the pupils knew about tenses and modes. Forty-five short sentences were printed. Abbreviations were indicated for the different modes and tenses of each verb. The test consisted in telling the mode and tense of each verb. The standard score was 20. Pupils from the Junior High school just equaled the standard score. Sigsbee pupils were three below the standard score, while those pupils who had not had Latin were only .21 of a point below Sigsbee pupils; a somewhat consistent exhibit but not particularly brilliant.

The fourth test is not a standardized test but was devised by Mr. Charles D. Dawson, assistant principal of the Junior High school, and the test was designed to find out the ability of the pupils to understand and use a reasonably large vocabulary. In order to select a good list of words Mr. Dawson read carefully Beard's American History and noted the words the meaning of which pupils must appreciate in order to get the sense of what they were reading. One hundred of these words were printed, and given to the pupils. They were told to give the meaning of the words, either by giving a synonym or by using the word in a sentence in such a way that the meaning of the word would be apparent. It is an interesting list. Among these words were navigator, proprietor, armament, gorgeous, discipline, torsional, illiterate, fac simile. I approve of Mr. Dawson's method in making this list of words. In my opinion it is much better than the method often used of selecting words at random from a dictionary. Let us see the results.

Junior High pupils who had had Latin stood 49; Sigsbee pupils 47; pupils who had had no Latin 44.6. I want to explain that no pupil was expected to be able in the time given to get all the words; that is to say, 100 is not the standard score. So many words were given and the time made so short that it was impossible for anyone to finish the test. You understand also that the scores given above are the median scores of each group. Here again the results are perfectly consistent. The Latin pupils from the Junior High stand highest, the Sigsbee pupils who have had Latin stand next and pupils who have not had Latin stand lowest.

I am not going to give arguments now to sustain the proposition that the study of Latin is helpful to pupils in obtaining an accurate knowledge of the English language. I am giving the three exhibits to show you that there is a large preponderance of evidence in favor of the above proposition.

Doubtless you have observed that our purpose in teaching Latin in the seventh and eighth grades is primarily for the purpose of giving better instruction in English. Our main purpose is to teach English and not Latin. It is true, however, that pupils enjoy their Latin and they certainly do get a very good knowledge of the fundamental facts of the Latin language. The two teachers mentioned above are undoubtedly superior teachers and have a very great enthusiasm for the teaching of Latin. They make the subject real and vital and interesting to the pupils. I remember listening to a playlet given by Miss Jones' pupils in the Junior High school done in Latin, which was very interesting. The pupils entered into the play with as keen appreciation of the meaning of what they were saying as if they were talking English.

It seems to me that we should approach the teaching of any modern language in a different way. We do not teach pupils French or Spanish for the sake of improving their English although incidentally such a desirable result should be obtained. But the purpose of teaching French is to enable the pupils to use the French language accurately and idiomatically. In order to get this result it seems to me that the less one uses the English language in the teaching of French the better off the pupil will be. Certainly this is true in the first years of teaching French. I should doubt the wisdom of comparing the English language with the French language very much. I should expect to learn French more rapidly and accurately if I could be placed in a position where I could hear no English whatever for a considerable length of time. For more mature students there is much to be gained in the comparative study of the foreign language with the English, comparing idioms and construction, etc. In the earlier years the less you talk about English the faster your pupils will learn the foreign language you are attempting to teach.

I promised not to say much about the correlation of the teaching of English and any other foreign language than Latin and I am going to keep my promise.

Both these papers were discussed at some length by both of the speakers and by Dean Babcock, Supervisor J. C. Hanna, and Superintendent P. O. Riley.

2. Joint Session of the Science Groups

A joint session of the science groups of the Conference was called to consider the problems of organization and correlation of the science program of the high schools. The first speaker was Dr. J. A. Stevenson, of the University, whose theme was **"The Project in Science Teaching."** Dr. Stevenson spoke as follows:

The term *project* has made its appearance in educational literature rather frequently during the last few years, particularly in the fields of agriculture, general science, home economics, industrial education and more recently in connection with the administration of the Smith-Hughes Act. The term *project* is used very frequently by science teachers, as a survey of the science literature and the subjects in their educational program will show. Notwithstanding this apparent interest and enthusiasm for the *project method,* there seems to be no uniformity in the use of the term nor any special effort expended to arrive at a clear-cut definition or description of this latest arrival in educational terminology. Since there is no uniformity in the descriptions and definitions of the term *project* it seems worth while to determine whether the contribution it makes could be taken care of by other teaching units or concepts now in use, or to define the idea clearly so that it may take its proper place among other teaching units.

This paper will be devoted mainly to the investigation and solution of the following problems:

1. The determination of certain elements in a type of teaching situation which constitute the *project*. These will be treated as four pairs of contrasted aims in teaching.

2. An examination of the concepts now in use in science teaching for the purpose of estimating their availability for describing the teaching situation now called the project.

3. A statement and explanation of the term *project*.

4. A consideration of the *project* and its relation to problems, thinking, habit formation, action and the curriculum.

5. A statement and discussion of the advantages and shortcomings of the *project method* in science teaching.

Standards of Judgments

To determine the elements in a type of teaching situation, which constitute a *project,* it is, of course, necessary to set up certain standards of judgment. These have to do, on the one hand, with learning and use of subject matter, and, on the other hand, with certain elements which will later be shown to be implied in the term *project*. These standards will be treated as four pairs of contrasted aims of types of learning, viz:

1. Reasoning and the memory of information.
2. Conduct and information for its own sake.
3. Natural setting for learning and artificial setting for learning.
4. The priority of the problem or of principles.

1. *Reasoning and the memory of information.* Two widely different methods of learning have been and are still used in educational practice. The one measures its success by the ability which the child has to reason; the other by the ability which the child has to appropriate the material outlined in the textbook and give it back when called for during the recitation. This latter method may be termed the acquisition of information by memory. The material in the lessons consists largely of dogmatic statements, and the mental activity demanded of the pupil is reduced largely to reproductive memory. The mental act demanded of the pupils in such exercises is not reasoning, but the mastery of statements outlined and organized by the author. This is clearly shown by the survey of textbooks used by children in the grades and high school. The questions at the close of the chapters in textbooks in physics, chemistry, general science and other science texts may be answered if the child remembers the statements which are given in the text. The activity which the child uses is confined largely to reproductive memory.

The recognition of the inadequacy of memorizing information is not recent, for seventy years ago, Horace Mann pointed out what earlier writers had noticed, viz., that verbal memory received too much attention.

A statement from Mann, quoted because of its humor, illustrates an extreme case of memoriter teaching.

"It recently happened, in a school within my own knowledge, that a class of small scholars in geography, on being examined respecting the natural divisions of the earth—its continents, oceans, islands, gulfs, etc., answered all the questions with admirable precision and promptness. They were then asked, by a visitor, some general questions about their lesson, amongst others, whether they had ever seen the earth about which they had been reading; and they unanimously declared in good faith that they never had."[1]

The defects of the memory exercises were noted early and the correctives which were suggested by Mann and others grew into the concepts of the natural method, thought questions and later into the more elaborate form now known

[1]Life and Works of Horace Mann, Vol. 2, p. 68, Lectures and Reports.

as the problem method sponsored particularly by John Dewey, Frank McMurry, and W. W. Charters.

The most important advantages claimed for the problem method are that it gives a better hold on subject matter and develops a technique of reasoning. It encourages and stirs up self-activity on the part of the child, so that he learns from his own experience.

2. *Conduct and information for its own sake.* The second pair of contrasted aims in types of learning, conduct and information for its own sake, will be considered. It is necessary to distinguish between the completion of an act (conduct) as over against reading about and learning the plan of an act (information).

Conduct as characterized by John Dewey is "a general term for the spirit and tenor of all the overt acts that constitute the behavior of an agent." As contrasted with the term, "behavior", the word, "conduct", is usually limited to acts that have an end consciously in view and that are preceded by more or less deliberation — in short, to such acts as have moral quality, actual or potential.[1]

The implied question which it is necessary to consider is the character of the end of education. Is it the accumulation of information or the modification of conduct?

The answer which all teachers undoubtedly would give is that the modification of conduct is the true end of education. And yet in classroom practice, the mastery of information and not its applications to problems of conduct, is all too frequently made the important end of instruction.

It must be recognized that information does modify conduct but the modification is not automatic; it is to a very considerable degree both voluntary and conscious. It requires thought to apply information to conduct and this application has such a subtle technic that instruction in the applications of information is necessary.

The act carried to completion guarantees that the solutions will be understood and will become the property of the individual who thus carries it out. Information will then be measured by the extent to which it can be made over into the experience of the individual using it so as to solve his problem.

3. *Natural Setting and Artificial Setting of Problems.* The question of whether the problem is in its natural or artificial setting constitutes the basis for the discussion of the third pair of contrasted aims of teaching. The question that must be answered in determining whether the setting is artificial or natural is this:—Is the problem presented for solution by school room practice essentially different from that found in life outside the school? If the solution is carried on in the same way, then the problem has a natural setting even though it is being solved in the school.

The boy in an agricultural course, who determines to test his father's seed corn as a part of the school work, is carrying on the problem in about the same setting as if he were doing it at any other time. The girl in household science who becomes interested in the canning of fruit for the home as a part of the school work, is likewise carrying on the problem in its natural setting. The making of soap, the testing of baking powder with the home interest in mind are problems in their natural setting.

The criticism, that the subject matter of the school is still largely isolated from the experiences outside the school, is due largely to the fact that few provisions are made for attacking and solving problems in the school in their natural setting.

4. *The Priority of Principles or of Problems.* These rubrics indicate differences in the order in which principles and problems are presented. In the

[1]Dewey, John. Conduct, Cyclopedia of Education. (Macmillan Co. 1911, Vol. 2, p. 175.)

first, the study of principles precedes its applications to a problem; in the second case, the problem is staged for the learner and the principles are introduced when needed.

The foregoing method is commented upon by G. R. Twiss: "As finding the place of a new fact or phenomenon in the general system is always the final step for the scientist in the treatment of a problem, so it should be for the student in the science class. Accordingly the logical position of a new fact should not be given by the teacher at the start, as so often it is, but should be found by the class after they have studied it."[1] And again, "This fundamental the facts, and allow them to be used only as working hypotheses until the accumulated evidence forces conviction—is flagrantly violated in some of the most widely used texts in both chemistry and physics. In one physics text the wave theory of light comes almost at the beginning of the subject, and the molecular theory is introduced before the phenomena of heat are taken up. In several of the chemistries the authors take the shortest possible cut to the atomic theory. The result is muddy and vague talk by the pupils about what molecules and ether do, when plain statements of fact are required. It leads them inevitably toward a dogmatic, deductive attitude; and it fails to train them in distinguishing between fact and inference—an ability that is absolutely essential to any clear and scientific thinking."[2]

The advantages claimed for the priority of the problem as over against the priority or principles are the following:

1. The principles will be better understood when they are developed as the learner has need for them.

2. The principles learned in this way are learned in the same order that they were learned by the race. The formulation of the principles is the capstone of the observations. It does not come first.

3. There is more interest attached to the formulation of the principles.

The disadvantages claimed are that fewer principles may be given and a systematic outlook might be difficult to obtain. This question will be answered later when the implications of the project method are considered.

The Problem Restated

Four pairs of standards have been mentioned: (1) information acquired by reasoning; (2) information for its own sake and information for use in modifying conduct; (3) learning in an artificial setting and learning in a natural setting; and (4) the study of principles before the problems in which they are useful as against the setting of problems with the introduction of principles as needed in their solution.

It is evident that there might be an important type of teaching situation in which the student would attack a problem in its natural setting, would obtain information in actually modifying his conduct, and would learn his facts and principles as the solution of his problem demanded. If so, there is a demand for a name for such a teaching situation provided no concept now in use denotes these elements and provided the situation is of sufficient educational importance to warrant the invention of a new concept.

The question of whether the situation indicated above is of sufficient importance to warrant the invention of a new concept will be considered first.

That such teaching situations are numerous is clearly shown by the constant recurrence in several fields of instruction. Two fields may be mentioned here as illustrations. The situation in agriculture is stated by R. W. Stimson: "In the ordinary routine of the farm it may be that the boy is required to tend

[1]Twiss, G. R. Science Teaching, pp. 77-78, 1917 (Macmillan Co., Chicago).
principle of science teaching—withhold theories until they are needed to explain

[2]Twiss, G. R. Science Teaching, p. 309, 1917 (Macmillan Co., Chicago) (Quoted from Smith and Hall's Teaching of Chemistry and Physics, Longmans, N. Y., 1902, Chapter VI).

the poultry. During at least one year he should be given control of at least one pen of poultry, and facilities for feeding a balanced ration and trap nesting individual birds for comparison of productivity in laying."[1]

In household science a student is required to assume responsibility for the purchase and preparation of the meals at home for a longer or shorter period, with the understanding that they be well balanced.

These two problems are types of situations not at all uncommon in the agricultural and household science courses which involve the four standards of reasoning and information acquired as it is needed for use in carrying on a practical line of action in its natural setting.

Can the above teaching situation be taken care of by the accepted meanings of concepts now in use in science? If they can, there is no need of a new term in our educational terminology.

An Examination of Commonly Used Concepts

The terms commonly used in accepted science texts are questions, problems, exercises, reviews, illustrations, applications, demonstrations, experiments, topics, and practicums. These terms are found with sufficient frequency to warrant the statement that they include the concepts now in common use in science teaching.

A critical examination of these concepts was made to see if any one is sufficiently inclusive and exclusive in its scope to provide for the situations cited in household science and agriculture. If all of the four desirable standards are not included or if any other than the four standards are included, it will be desirable to propose a new concept.

The method by which this examination of all the concepts was made will be illustrated by taking the problem and practicum, which approximate the concept project to see whether they take care of the situations from agriculture and household science cited above. The definition of the term, problem, in its general use is given as stated by John Dewey. "Every conscious situation involving reflection presents a distinction between certain given conditions and something to be done with them; the possibility of a change. This contrast and connection of the given and the possible confers a certain problematic, uncertain aspect, upon those situations that evoke thought. There is an element, which may be slight or which may be intense, of perplexity, of difficulty, of confusion. The need of clearing up confusion, of straightening out an ambiguity, of overcoming an obstacle, of covering the gap between things as they are and as they may be when transferred, is, in germ, a problem."[1]

In relation to the eight standards, the problem may lay stress on either the memory of information or reasoning. It usually emphasizes the intellectual phase of the solution rather than its carrying over to modify conduct and it takes into account the natural setting but may, and often does, accept an artificial setting. As interpreted by the leading advocates of the problem method, however, it favors the priority of problem over the statement of principles. It does not, therefore, exclusively include all the standards which are necessary to take care of the type of situations as illustrated from agriculture and household science. The greatest shortcoming of the problem is that the solution is not necessarily carried over into action, but rather emphasizes intellectual activity. The actual carrying of the process over into action as in the preparation of the meals for a limited time and raising of the pen of poultry are not essential to the problem method. Unless the concept of problem as ordinarily used is modified, it will not take care of the items which our proposed concept embraces.

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[1]Stimson, R. W. The Home-Project. U. S. Bureau of Education, No. 579, p. 15 (1914).

[1]Dewey, John. Problem, Paul Monroe—Cyclopedia of Education (Macmillan Co., Chicago).

The term *practicum* which represents one of the latest concepts in methods of teaching, is used particularly in agricultural education. It usually means the application of principles learned to the carrying out of an exercise which has economic value and which is of interest to the pupil. The definition given in the Standard Dictionary is "In some colleges and universities an academic exercise consisting of practical work as in the laboratory." Since in the term *practicum* principles are given priority over the problem the term cannot be used, without qualifying, to take care of the teaching situations cited above. The *practicum* makes no provision for arousing the interest of the pupil by placing it in a situation where principles must be developed as needed. In carrying out the situations in household science and agriculture by the practicum method it would be assumed that all the principles had been thoroughly mastered beforehand and that the exercises were merely to illustrate such principles.

An examination of all the concepts used in science shows that in their ordinary meaning they do not exclusively denote a method of teaching, involving reasoning primarily for the sake of modifying conduct in its natural setting and the introduction of principles as they are needed in the carrying out of an act. If any of the foregoing concepts or terms is used, some qualifying adjective would have to be added to it, with attendant complication arising from confusion of meaning.

The Concept Project Proposed

The concept which is proposed for the situations described in agriculture and household science is the project.

The justification for taking a term that has been in use for some time is that in general the aim of those who use it has been to take care of such situations as cited. The use of the term *project* seems to point to the movement for a term which will accommodate the above mentioned situations. Again, since a few formal definitions have been proposed and since the limits of the *project,* as interpreted from the literature have not been clearly drawn, it would seem advantageous to use it as our term and avoid the necessity of proposing another one. By so doing we should avoid the confusion which might come later in the use of the term *project* and the new concept proposed.

Definition of the Project

The definition of the project which is proposed for substantiation is the following:

A project is a problematic act carried to completion in its natural setting.

In this definition note that (1) it implies an act carried to completion as over against the passive absorption of information; (2) it develops the problematic situation demanding reasoning rather than merely the memorizing of information; (3) it implies by emphasizing the problematic aspect, the priority of the problem over the statement of principles, and (4) it makes provision for the natural setting of problems as over against an artificial setting.

For the sake of clearness a brief discussion of these particular phases of the definition will be given.

(1) The presentation of subject matter or the staging of a situation which results in activity, in carrying out the act to completion as over against the passive acceptance of information is one of the most significant contributions of the project. For the term, act, or action, the definition of E. B. Titchener may be accepted. "In its most general meaning, an action is an organized movement, less generally, it is a movement of a locomotor organism. The characteristic feature of the action consciousness, as distinguished from the consciousness so far considered, is its predetermination in the sense of the idea of end."[1]

[1]Titchener, E. B. A Text Book in Psychology, pp. 448-449 (Macmillan & Co, Chicago).

In ordinary usage of the term, activity means the contraction and relaxation of muscles in physical activity. For educational purposes the meaning should be broadened to include the situations defined by Dewey "as a series of changes definitely adapted to accomplishing an end. Hence it is opposed to restless and random changes, as well as to mere quiescence and passive absorption. Dictated exercises * * * when not accompanied by any sense of a result to which they naturally contribute, are not activity in its genuine, or intellectual, significance; neither is undirected overflow of motor impulse."[1]

There are many different kinds of activity, intellectual, social, religious and physical. The *project* does not limit itself to physical activities alone but makes provision for these other acts, provided the individual takes a part in the purpose, choice and reflection of the directed action. Thus "physical activity when not accompanied by any sense of the result" is not considered activity but intellectual activity when accompanied by a sense of result is considered an activity in an educational sense.

The expression, problematic act, has been formulated and used in the definition of *project* for the distinct purpose of emphasizing not only the act but also the problematic aspect of the act.

(2) It is essential that the *project* be understood to include a problem, otherwise it could not be differentiated from habits and reflexes such as digestion, respiration, or from knitting and dishwashing after they have become habitual. The *project* may include habits and reflexes, provided in addition, there is involved a problem, a situation demanding reasoning for a solution.

(3) The problem aspect of the *project* not only involves reasoning but contains a distinct implication of priority of the problem situation over the statement of principles. The learner in the *project method* is brought face to face with the difficulty and in the process of dissolving this difficulty or arriving at a solution principles are developed as needed. The skill in teaching is brought into play just here—in staging situations which present difficulties and arouse in the minds of the learners a need for solutions.

(4) The implication of the term, natural setting, has been discussed in the beginning of this paper and it is unnecessary here to go into detail other than to state that the project provides for the natural setting of situations, which means that the situations undertaken in school are not essentially different because they are problems taken up in school from what they would be were they to come up in life outside the school.

The situations which were proposed in connection with the study of household science and agriculture are adequately taken care of by the concept project as here defined and described.

The boy who controlled at least one pen of poultry, with facilities for feeding a balanced ration and trap nesting individual birds for comparison of productivity in laying, would be brought into a situation which demands reasoning. The memory of information would not be sufficient to carry on this problem, for the conditions as they change daily demand reasoning. The results of his investigation and the principles which would be evolved as needed would result in the completion of the act in its natural setting. If the boy had become interested in the *project,* had started it, but after a few days or weeks had stopped, no results of any consequence would have resulted and it would have illustrated a situation, arising in its natural setting, but not carried to completion. This could be designated as an incomplete *project.*

The Need of the Concept Project for Certain Types of Teaching Situations

Situations, such as the foregoing, have been recognized for a long time by educators as a type of educational problem which is worthy of solution, even though it has seemed difficult to devise a teaching unit which would handle such a situation. The recognition of the need for such a concept, has led to

[1]Dewey, John. Activity, Monroe, Paul. Cyclopedia of Education (Macmillan Co., Chicago).

discussion of the *project* with concurrent definitions which vary more or less in inclusiveness, yet which indicate a search for a concept such as proposed.

Definitions of Project Proposed by Teachers of Science

The *project* has been developed and used rather extensively by teachers of science, yet very few definitions have appeared and even these probably could better be termed characterizations.

The most comprehensive characterization has been given by C. R. Mann:

"(1) A desire to understand the meaning and use of some fact, phenomenon, or experience. This leads to questions and problems. (2) A conviction that it is worth while and possible to secure an understanding of the thing in question. This causes one to work with an impelling interest. (3) The gathering from experience, books and experiments of the needed information, and the application of this information to answer the question in hand."[1]

A few citations from the writings of J. F. Woodhull will give his views of the *project method* in science.

"The purpose of science teaching in all grades of schools is not chiefly to impart knowledge of subject matter but to train persons in the method of the masters, which is invariably the project method. This is the method used by intelligent men in achieving their ends, in school or out."[2] In commenting on the method of the masters this reference will be explanatory: "The real way to learn fundamental principles is to attack those problems of which life is full for each individual, not through the preparatory fallacy called the scientific method, but by a 'forked road situation.' The school should prepare pupils to walk alone by attacking real problems as Archimedes, Galileo, Davy, Faraday, Pasteur, Tyndall, and all the rest did. Most of us know, if we would think back over our experiences, that we never really learn these so-called fundamental principles until they come to us as an interpretation of some of our life's problems."[3]

Woodhull indicates that the *project method* is nothing more or less than the method of the scientist adapted to children. In order to get a more accurate notion of Woodhull's conception of the *project* it is necessary to determine just what is the method of the scientist. Morris Meister of Columbia University gives the following analysis of the scientist at work:

"(1) That he bgeins in a state of perplexity.

"(2) That he works with an intense enthusiasm because this perplexity is the result of a real, pressing, vital difficulty.

"(3) Once the difficulty is clearly defined his enthusiasm carries him to a solution by a process which is automatic but which can be described as:

"(a) A process of rapid suggestion, supposition, guess, hypothesis or theory—pending further evidence.

"(b) 'Reasoning out' the implications of each suggestion.

"(c) Deliberately and cleverly arranging conditions in accord with the requirements of any of the suggestions to see what results occur and to weed out the false suggestions."[4]

"A *project,* or *problem,* differs from and is superior to a topic in that (1) a *project* originates in some question, and not in such a logical sequence of ideas as may be found in codified subject matter. In teaching from the so-called 'logical' texts one wrongly attempts to induce pupils to accept topics as their own *projects.* Local organization of such material as functions in life

[1]Woodhull, John F. The Aims and Methods of Science Teaching. **General Science Quarterly,** Vol. 2, pp. 249-250, Nov. 1917.

[2]Woodhull, John F. The Aims and Methods of Science Teaching, **General Science Quarterly,** Vol. 2, p. 249, Nov. 1917.

[3]Woodhull, John F. Science Teaching by Projects. **School Science and Mathematics,** Vol. 15, p. 229, 1915.

[4]Meister, Morris. The Method of Scientists. **School Science and Mathematics.** Vol. 18, p. 743.

will be the final result of a protracted study of *projects*. (2) The *project* involves the active and motivated participation of the pupil in carrying it out. It does not, therefore, like the topic, lend itself to didactic, formal treatment in which the teacher does all the thinking and the pupil passively absorbs. (3) *Projects* furnish a basis for the selection of facts according to value or significance; topics furnish no such basis for selection. (4) The *project* seldom ends in a complete, final or absolutely finished conclusion."[2]

Again, J. A. Drushel, science teacher in Harris Teachers College, St. Louis, Missouri, proposes this definition: "A project is a concrete problem outlined sufficiently fully and clearly to carry it out."[1]

J. A. Randall, Department of Physics, Pratt Institute, Brooklyn, New York, defined a school *project* as "a problem the solution of which results in the projection of some object or knowledge of such value to the worker as to make the labor involved seem to him worth while."[2]

The definitions proposed in the field of science agree in that the *project* involves a problematic situation, in fact, Woodhull does not differentiate between the *project* and the problem, but Randall and Woodhull alone lay emphasis on carrying the act to completion. Randall makes no provision for the natural setting of the problem. The situation outlined by Mann and Woodhull may be properly classed as a multi-problem, by Drushel an application, while Randall's definition covers most of the elements which have been considered essential to the project, with the exception that the natural setting for the problem is not specifically indicated.

Implications of the Project

The definition of the *project* takes into account the natural setting of the problematic act which means that it has significance for the learner. The natural setting provides a strong motive—testing seed corn for the father is more interesting than making laboratory tests of one or two ears of corn. All *projects* may not be interesting to any one student, but interest in the projects selected by the pupil is likely to be very high. When a project is interesting it is very interesting. The *project* creates interest of a deep-seated sort because the interest comes from associative connections of many sources. The *project* offers many more reservoirs from which interest may be drawn.

If the *project* is to be made the basis for the curriculum it is necessary to decide what principles should be mastered by the students and then select *projects* or groups of *projects* from which the students may select. The *projects* selected by the pupils will be such that all the facts, principles, and processes will be covered which ordinarily are covered in the logical or systematic presentation.

After the facts, principles and processes have been covered by the *project method* in class, enough time should be left in the course so that the subject matter may be systematized. First, the *project* is used for the approach to all parts of the subject, and then a systematizing study of the field follows as an extended summary.

The shortcomings of the *project method* are in not making adequate provision for habits and skills and for giving a systematic or logical view of the subject. A methodology which makes no provision for these other than in a purely incidental way, is seriously defective and may greatly make its theory subject to the criticism, that it is encouraging "soft pedagogy."

The use of the *project* in science teaching is not always in good repute, not due to any inherent fault of the method, but due rather to the fact that the method is rarely carried to completion. As Bobbitt suggests: "It is by far

[2]Woodhull, John F. The Aims and Methods of Science Teaching. General Science Quarterly, Vol. 2, p. 2, Nov. 1917.

[1]Drushel, J. A. Definition sent to writer by Superintendent John W. Withers, St. Louis, Missouri, March 23, 1918.

[2]Randall, J. A. Project Teaching, N. E. A. Report, p. 1010, 1915.

the most complicated method; and differs most from familiar traditional ones. It is not, therefore, surprising that teachers often develop an incomplete and ineffective form of the method. Whenever a training task involves practical performance, this is so visible, tangible, and solid sense that it often comes to be conceived as being the whole thing. The teacher attempts to get the pupils in the most economical and expeditious way to perform the practical actions by way of securing the results. The teachers, therefore, often do the thinking, draw up the plans, and prescribe procedure for the students."[1] Such a procedure, of course, is not the spirit of the project method and rightfully deserves such characterization as a "hodge-podge" science, "soft pedagogy," an "unorganized mass," "a device for getting hold of deficient students and keeping them from making trouble or from leaving school."

The *project method* rightly carried on develops great interest, gives training in carrying acts to completion, and provides adequate opportunity for directing thinking and reasoning. Its shortcomings are in providing for habit formation and a systematic view of subject matter.

At the close of this paper the question of practical applications of the general fundamental facts brought out in it was raised. Dr. Stevenson, in reply, expressed his willingness to cooperate in assembling data on tried projects in the various science courses. The assembled projects could be put in book form and distributed to the science teachers of the State. A motion was presented authorizing the Chair to appoint a representative committee from the science groups of the Conference to cooperate in assembling data on the Project Method of Science Instruction. The following constitute the membership of this committee: Dr. J. A. Stevenson (Chairman), Urbana; Dr. H. D. Waggoner, Macomb; Miss Florence Churton, Urbana; Mr. T. M. Barger, Normal; Miss Annie L. Weller, Charleston; Mr. Carl Colvin, Urbana.

A round-table discussion upon the topic, **"The High School Curriculum, with Special Reference to the Common Pabulum of Science,"** occupied the attention of the joint session for the remainder of the meeting. The Chairman, Dr. H. J. VanCleave, gave a brief statement of the problem as follows:

The one big outstanding fact which faces us as science teachers is the lack of uniformity in the secondary science courses in the State. Many factors have contributed directly or indirectly in bringing about this condition. Many of these we as individuals and as a group have little power to alter or improve. There are, however, some aspects of the problems involved which should receive serious consideration by those interested in the teaching of science. These will be brought out in the discussions of this afternoon.

Many science courses are now proposed as suitable for high school students. Not all of these sciences can be given in the average high school. Administrators are apt to select the ones which make the strongest popular appeal regardless of either true scientific or educational values. Scientists have not been agreed as to relative values and as to sequence of these courses in science; why should we expect

[1]Bobbitt, F. The Curriculum, pp. 31-32. (Houghton, Mifflin and Company, Chicago.)

that administrators should be? For the cause of science in the public educational system science teachers must forget their petty differences and personal prejudices each for his own narrow specialty. Only then may we arrive at some definite proposition regarding the place of science in public education which may be submitted to administrators as the organization of the high school sciences upon which science teachers are agreed.

In determining this organization the following are some of the questions which must be answered:

(1) Should there be a minimum program of high school science required of all students? If so, how many years of the high school course should it cover?

(2) Unless we are certain that all high school subjects now classified as "science" are of equal educational value, free election on the part of an administrator is not apt to best serve the cause of science in secondary education. Should certain science subjects be specified as required with other sciences to be offered as needs and means of the particular community permit or demand.

(3) What sequence should the required subjects follow?

(4) Is it possible for this joint session to offer definite recommendations concerning the organization of the curriculum in science to the high schools of the State through this Conference?

After the foregoing statement of the general problem the following five papers were given by representatives of the various science groups.

The Proposed Two-Year Course in Fundamental Science From the Viewpoint of Vocational Agriculture

Professor A. W. Nolan

Representing the Agriculture Section

The proposition to provide two years of fundamental science in the first two years of the high school will meet with the approval of the teachers of vocational agriculture. Agriculture as a subject in the high school may be considered as having two aims:

(1) That of general information about agricultural science and making up an offering for the high school curriculum just as biology, English, or any other subject in the course.

(2) The vocational aim in which the purpose is to give training in the skill and knowledge necessary for the making of farmers.

In case the former aim is held the teacher of agriculture I believe would agree quite generally to the proposition of having such a course in agriculture preceded by the two years of fundamental science, for evidently not very much vocational work could be hoped for in only one or two years of high school training in agriculture. With the vocational aim in agriculture, we insist that the work be begun in the first year and that it be continued in so far as practical through from two to four years. We should not agree to the proposition to postpone the agricultural work until after the two years of fundamental science when the aim of agriculture is vocational. I believe we should quite agree, however, to the proposition of the two years of fundamental science paralleling the agricultural work in the first years.

In high schools attempting to give courses in agriculture the two years of fundamental science offered as a required science would make possible the elimination of several other sciences attempted and give more time for vocational courses. It would seem, therefore, that for the smaller schools desiring to do vocational work the proposed science program would be desirable.

Science in Relation to Home Economics in High School

(Abstract of Paper)

Miss Florence Harrison

Representing the Household Science Section

If Home Economics courses could be arranged ideally the various sciences would be taught first and the food courses could then apply the principles learned in the science classes. In order to meet the demand of the people or do the greatest good to the largest number, foods courses at present are largely taught as an art and the small amount of science taught must be given by the teacher in charge.

With the passage of the Smith-Hughes bill Home Economics has been placed under the same regulations as the trades and industries, namely, that in towns of less than twenty-five thousand inhabitants one half of the school day must be devoted to Home Economics and the related subjects.

The suggested four year course in Home Economics for Illinois under the Smith-Hughes regulations includes general science in the first two years. Physiology and hygiene should be taught in the second year and correlated with a home nursing course. The third year should be devoted to household chemistry while the fourth year would include household physics.

For a number of years the Home Economics Department of this University has tried to require high school physics as a prerequisite for the first year food course. There are many who come without this requirement. May I appeal to those of you who are teaching physics? Will you insist upon those girls who are preparing to enter the University, having high school physics, at least the subjects of heat and mechanics?

Principal W. E. Andrews

Representing the Geography Section

Lest we narrow down our view to the slender personal interest which we have come to attach to subjects long since chosen to specialize in, let us give attention to some of the factors which must be considered.

The diversity among Illinois high schools with reference to the kind of a plant that is available for training high school pupils through science courses must be considered.

According to the official records for the school year closing June 30, 1917, in Illinois there are 854 high schools. Of these 212 are two year high schools; 104, three year high schools; 538 are four year high schools. Twenty-five percent of the Illinois high schools are two year schools; 12 percent are three year schools; and 63 percent are four year high schools.

Of these 854 high schools, 236 employ but one teacher; 109, two; 168, three; 85, four; 54, five; 38, six; 16, seven; 24, eight; 14, nine; 11, ten; 8, eleven; 9, twelve; 6, thirteen; 4, fourteen; 6, fifteen; 4, sixteen; 3, seventeen; 4, eighteen; 2, nineteen; 2, twenty; 5, twenty-one; 2, twenty-four; 2, twenty-five; 1, twenty-six; 3, twenty-seven; 3, twenty-eight; 1, twenty-nine; 2, thirty-three; 2, thirty-four; 1, thirty-five; 2, thirty-six; 2, thirty-seven; 1, thirty-nine; 1, forty; 3, forty-one; 2, forty-two; 1, forty-three; 1, forty-seven; 1, fifty; 1, fifty-one; 1, fifty-two; 1, fifty-eight; 1, sixty-one; 2, sixty-six; 1, seventy-one; 1, seventy-two; 1, seventy-three; 1, seventy-five; 1, seventy-seven; 1, seventy-eight; 1, seventy-nine; and one eighty-four teachers.

Twenty-eight percent of the Illinois high schools employ but one teacher; 40 percent, two, or less; 60 percent, three or less; 70 percent, four, or less; 76 percent, five, or less; 89 percent, ten, or less. Only 11 percent employ more than ten teachers.

Of the 854 high schools, 271 enroll less than 25 pupils; 458 enroll less than 50 pupils; 638 enroll less than 100 pupils; that is, 32 percent of the high schools enroll less than 25 pupils; 54 percent, less than 50 pupils; and 75 percent enroll less than 100 pupils.

Between the Senn High School of Chicago, with its 84 teachers and 2600 pupils, and the three small high schools which report an enrollment of four pupils each there are all degrees of gradation.

The diversity involved in annual expenditures ranges between the Lake View High School with its $306,707.00, and a small high school in Greene County with an annual expense of $260.00.

The values of the high school property—limiting factors of effective science teaching—record even greater diversity in the range from $1,189,978.00 of the Harrison Technical High School to the undetermined modicum so small as given in many instances as to be incredible.

Second, must be considered the transitional epoch through which the high school is now undergoing rapid modification.

The high school is certainly a diversified composite of many variables not only, but also it is passing much more rapidly than any appreciate from its original state as a high school to become simply a part of the common school. Whether city high, township high, or community high school, all are merely the upper section of the common school. Upper common, and lower common, will be the appropriate designations for a time to commemorate the historic origin of the upper third of the common school.

The appropriation by the masses of the entire twelve grades is destined to produce a profounder change in what, at present, is called secondary education, than the same agency has produced in popular government. In the remodeling to which the upper third of universal education is now subjected conservative agencies must not cease their activity. What adolescent education should be is as important a matter as what popular government should be. It is evident that the common mind is now expecting the upper common school to signify to the youth of this generation what the vast domain of unoccupied rich lands meant for the youth of the earlier pioneer generations. For their children parents are considering it as the home of opportunity, the administrator of their inheritance, and their main chance in life.

It is for us not to forget the aims of adolescent education in this epochal effort to possess the high school for the material advancement of the youth. We should conserve the far reaching educational ideals which are easily overlooked when a people are bent upon using the public schools for material promotions.

Two types of education are now in sharp competition in the upper common schools. Just at the time when adolescent education was being relieved from the blight of adultism a new emphasis arose. In an age when the harm of child labor is universally conceded, what shall we say to the proposal to transfer the arena from the sphere of labor to that of learning? If by child labor the use of the child for lightening the load of economic necessity which surrounds the family is adjudged harmful, what may be found to result from the use of childhood specifically and avowedly to train for the occupations which are to be followed during adult life? We were proceeding on the idea that the training which the child actually needs arises out of his childhood, and not out of his future adulthood.

Shaping high school education as training for future occupations finds most ardent advocates in those communities which have large commercial interests to be advanced by such training. The southern attitude of taking the child directly into the factory might be more noble than that of the northerner who would take childhood no less directly there; the latter is the more shrewd,

because it guarantees greater profit. Shall strict vocational studies displace those formerly considered as ideal subjects for high school education? There is a conviction which is more than a tradition, custom, or relic, that learning the details of the daily round of occupational duties of the future does not adequately educate childhood. To shut out from the adolescent's life those studies which make the scientific appeals to his wonder, to his visions, and to his unbounded hopes may be the cause even of greater harm than prescribing for him an education which is designed to qualify him directly for his future occupation.

The high school cannot be permitted to so far neglect its mission as to entrap any youth into the lot wherein he perchance was born. Its ministry, as the agency of organized society to discover for each youth the pathway along which he is to pass to freedom into that sphere to which he by nature, not the lot of birth, was destined, must be conserved. To condemn to lifelong servitude in a misfit occupation may be worse than exile. In the name of education such deliverance from the adversities of birth are not to be withheld from our boys and our girls. In so far as any type of education would rivet down the manacles of economic necessity, accidental surroundings of inheritance, common community drift of occupations, or personal uncertainty as to future opportunities, it overlooks its principal ministry to the young.

Fourth, let us consider the factors which appear in our problems in virtue of the fact that in the high school strict prescription lessens and freedom of choice of subjects begins.

Popular education is nowhere more void of definiteness than in the public high school. With too free choice relative values of the subjects are not considered. Nor are the pupils intelligently guided by the teachers, parents, or their individual aptitudes. The remedy does not lie in continuance of prescription. In our recent efforts to establish vocational guidance we have lost sight of a much greater and far more important interest, namely, educational guidance. There is need for a revision of the standards for judging the educational worth for individual needs of the high school subjects.

In order that science may render its highest service through high school education important work must be done by those who are in positions which authenticate their findings and recommendations.

Six high school sciences are involved in this discussion, viz: botany, zoology, physiology, physiography, physics, and chemistry.

Which of these should be first eliminated? Which, next?

Which of these is to be considered as of the greatest importance in high school education? Which is of second rank?

Is the elimination to be open and aboveboard, or furtive and vestigial? Is it to be bodily, and at once, or through a prolonged ceremony, leaving the selected remnants to lie in state for a time in some indefinite course?

Having decided which are to be eliminated, and which retained, to what degree is each to be eliminated? Shall we advocate whole-year courses? Half-year courses? Quarter-year courses? Who is qualified to answer these questions? What reception would be accorded the findings of this committee?

I would say that anything less than a year-course would seem to exemplify a case of deciding to retain the science, and then reserving the contradiction in that the reduction in brevity amounts practically to discontinuance except in name.

Another would advocate reduction to a two-weeks course in a composite of similar remnants. Which is the correct determination?

I would say that the only general science course worthy the name of science education would be a four-year course composed of four year-courses taken in series, each year-course being devoted to but one definite science.

Another would claim that the ideal general science course covers nine or more single month-courses each selected from different sciences and all offered as a year unit. Which is the correct determination? Whose finding will secure the larger following?

Only by research by competent and authoritative experts in education, science, and administration can these important questions be competently answered.

Uniform Science Courses

Professor Fred D. Barber

Representing the Physical Sciences Section

The present chaotic condition of high school science courses, not only in Illinois, but more so in other states, is confined to the first two years. General science, physical geography, physiology, agriculture, domestic economy, botany, zoology and general biology—eight science subjects in all—are claimants for places on the program the 9th and 10th years. Physics and chemistry are still the standard science subjects for the 11th and 12th years.

No uniformity can exist so long as there are eight recognized science subjects claiming to be especially adapted to the 9th and 10th grades. Is reasonable uniformity to be desired? Might a reasonable uniformity be secured without doing violence to the welfare of any student, on the contrary, benefitting all? If these questions can be answered in the affirmative, should not this body of science teachers go on record as favoring such uniformity?

The claim is made that nonuniformity is necessary to prevent elimination from the high school. Approximately 40 percent of the students enrolled in Illinois high schools are doing 1st year work, 27 percent 2nd year work, 19 percent 3rd year work, and 14 percent 4th year work. We all grant the desirability of lessening this evident elimination. It has been claimed that free election of subjects throughout the high school course does lessen elimination. But are we to believe that the election of two or three from a list of eight science subjects during the first two years materially lessens elimination? If the choice is actually made by the pupil, it is at best a jump in the dark. His limited knowledge of the subjects precludes his choosing with understanding. If the choice is left to the parent, we teachers and superintendents admit our incompetency. We pose as specialists in matters educational but we shift the responsibility to the shoulders of the parent who, ordinarily, claims no special understanding of educational matters. As a matter of fact, however, in most high schools of Illinois election is not, and cannot, be left to either pupil or parent. All our smaller high schools must offer a few selected courses and no others. The superintendent or principal actually selects the science courses which the pupil must study.

How has this plan of selecting science courses for the first two years worked out? What has been the result? The reports of the Commissioner of Education show the drift of science instruction in Illinois, as well as throughout the United States. During the five-year period from 1910 to 1915 the percentage of students in Illinois high schools enrolled in physical geography *decreased* 24 percent; the percentage enrolled in physiology *decreased* 8 percent; the percentage enrolled in botany *decreased* 17 percent; the percentage enrolled in zoology *decreased* 22 percent. During the same five-year period the percentage of students enrolled in agriculture *increased* 52 percent, those enrolled in domestic economy *increased* 65 percent. The Commissioner's data do not include the change in percentage enrollment in general biology or general science. General science, however, has practically made its growth within 10 years. Today there are more than 100 high schools in Illinois offering the course. According to the Commissioner's reports physical geography, botany and zoology will disappear as high school subjects in Illinois in 20 or 30 years if they continue to decline at the rate they declined from 1910 to 1915. The statutes of Illinois may save physiology in this state.

During the same five years physics and chemistry remained practically stationary. Physics decreased 4 percent; chemistry increased 3 percent.

Illinois is by all odds the most conservative state in the Middle West in the reorganizing of high school science. Take Wisconsin for example: The

Commissioner listed in 1915, in that state, 315 high schools. I have a list of 130 of those high schools now offering general science, many of which are half-year courses. Nearly all Wisconsin high schools offer agriculture and domestic economy in the first two years. Mr. Goddard, State High School Inspector, writes me that last year fewer than 20 Wisconsin high schools offered botany and fewer still offered zoology. I have a list of 185 high schools in Iowa now offering general science. Botany is now largely displaced by agriculture and zoology is rarely taught. Missouri has practically banished botany and zoology, substituting agriculture, in her high schools.

This tendency to substitute a one-year course (too often a half-year course) in general science and courses in agriculture and domestic economy for courses in the older sciences in the first two years of the high school is made clearer by noting the approximate date at which the older sciences will disappear from high school curricula in the United States as a whole and a few of our nearby states, if the rate of decline from 1910 to 1915 continues. Thus, according to the Commissioner's report, physical geography will disappear from the United States in 1930, from Iowa in 1924, from Wisconsin in 1924, from Ohio in 1937. Physiology will disappear from the United States in 1923, from Iowa in 1926, from Wisconsin in 1927, from Ohio in 1929. Botany will disappear from the United States in 1921, from Iowa in 1923, from Wisconsin in 1927, from Ohio in 1928. Zoology will disappear from the United States in 1919, from Iowa in 1919, from Wisconsin in 1920, from Ohio in 1921. These figures can be only approximate for, as the curve of decline nears the base line it is bound to flatten out. These facts and data merely indicate the positive trend of science instruction in our high schools today,—a trend which has been perfectly evident for several years.

As the representative of the Physical Science Section in this discussion, as a teacher of physical science, as one who thoroughly believes in the possibilities of general science in the early years of the high school, I have no selfish motive in asking you to consider carefully the evident trend of science in the first two years of our high schools. Are you willing to see all biological science, as such, disappear from our high school curricula and its place taken by a one-year course in general science and courses in agriculture and domestic economy? Do even the teachers of general science, agriculture and domestic economy believe that the best interests of our students are served by such a change?

I make no plea for the saving of the older science subjects in their present form—as they have usually been taught—in the first two years of the high school. I do plead for the retention of some biological science as such, not merely incidental to courses in agriculture and domestic economy. I ask for a one-year required course in a practical study of animal and plant life because I believe that such instruction is an essential element in that common pabulum which should be the heritage of every high school student.

I do not believe that instruction in general science, agriculture and domestic economy, as those subjects are now taught and with the content they now possess, can furnish the desired instruction in the principles underlying the living world. General science has come to mean chiefly a study of our physical environment. Agriculture and domestic economy rivet the attention upon the application of the principles of science to special cases and upon the technic of getting results; they are largely art subjects and only in a limited degree science subjects. I believe that any instruction in agriculture or domestic economy to be effective must necessarily deal with the applications of the principles of science to special cases. If this is so, those subjects should be placed later in the high school course and follow a course in the fundamentals of science covering both physical and biological phases.

I propose, then, as the nearest approach to an ideal science program now possible for the ordinary four-year high school: For the first two years a two-year course in fundamental science required of all students. For convenience, this two-year course should be divided into two one-year courses. The 9th grade work should deal with the pupil's immediate environment, the home,

the school room and the street leading from home to school, together with such study of physiology and hygiene as may be required by law. It would deal chiefly with physical science materials. The 10th grade work should reach out into the pupil's outlying environment. It should explain to him the plant and animal life found in the garden, the orchard and the field and in the stream or pond. It should cover community sanitation and personal hygiene. It would deal chiefly with biological materials. It should make clear the fundamental principles of biological science.

The 11th and 12th grade work should be elective. Depending upon the size, the location and the facilities of the school, courses should be offered in agriculture, domestic economy, and in botany, zoology, physiology, physics and chemistry.

If the proposed two-year required course is to meet with the approval of administrators, parents and pupils it must be framed in the light of the experiences of the past 10 years. The subject matter must be chosen, organized and presented so as to make the same strong appeal to administrator, parent and pupil that general science, agriculture and domestic economy have evidently made. To ignore the lesson of recent years is to invite failure.

The two-year required course thus planned and generally adopted would serve the following ends:

1. It would provide a common pabulum of science instruction for all high school students—a prime necessity in a free democracy.
2. It would provide a known and stable foundation for elective science courses in the 11th and 12th grades or in college.
3. It would provide a simple and ready means of justly accrediting science in institutions of higher learning.

Where the high school organization is that of a junior high school embracing the 7th, 8th and 9th grades and a senior high school embracing the 10th, 11th and 12th grades, the required course should be extended over the three years of the junior high school, leaving three years for elective science.

The High School Science Curriculum, with Special Reference to the Common Pabulum of Science

Professor J. L. Pricer

Representing the Biology Section

This is a time for getting together on fundamentals. This is true in our case, not only because this is what is being done in almost every phase of our national life, but also because the friends of science education have been divided into separate camps long enough. During the last decade, in this conference, we have sufficiently emphasized and magnified the relative educational values of the different branches of science to which we as individuals and as small groups belong. This period of analysis and comparison and exposition of the educational values in the different branches of science has probably been a necessary step in the evolution of science instruction, but it has tended to divide our forces, and we have lost ground, because of a lack of the strength that comes from union.

It is time now for us to seek out the common ground upon which we can stand united in the interests of education in science, and as I see it, it should be the purpose of this meeting to discover such common ground. It is the mission of us leaders of the discussion then, to set up certain propositions, upon which it may be presumed that we can agree. We should all view the problems concerned in the spirit of compromise; we are not representatives of the different sections contending for time and space for our favorite subjects; we are a committee of the whole seeking to organize a force that will be able to give to science the place and standing and character that it ought to have in the high school curriculum. We need to stand united in this matter, for there are still not wanting, in other fields of education, a good many peopple

who look upon science education as more of a fad than a necessity, as at least an alternative for which there are plenty of acceptable substitutes.

As a first proposition, I submit the following: We should demand that the time accredited to science in any high school curriculum should be devoted to a study of *real* science in a scientific way. It must consist of a study of facts and principles, properly organized and related. It must not consist of a mass of useful information, unrelated to the fundamental principles that underlie it, and make it intelligible. It must not be a superficial consideration of some art such as a course in agriculture, or household science, or even of hygiene and sanitation, as usually it is given to graduates of the eighth grade who have had no previous training in fundamental science. If such courses must be given to such students, the time should not be counted as devoted to science.

As a second proposition, I submit the following: We should demand that the "required-of-all" science, or the common pabulum of science, should consist in the main of what may be called fundamental science. It should be the fundamental science, however, which has the widest and most vital connection with the most common and the most pressing problems which society needs to have solved. It must be the science which underlies and interprets the practical problems of every-day life. Its facts and principles must be those which are needed in solving correctly and scientifically those practical problems which, when solved, will contribute most to social welfare.

There must be much application of the principles of this course, to be sure. Application of a principle is necessary in order to reveal its significance, and to make sure that it is understood or that it is working knowledge in the mind of the pupil. In fact, it is impossible to grasp a principle except thru some of its applications. We reach the general and the abstract only thru a consideration of the individual and the concrete. Probably every lesson or unit of subject matter should begin with one or more applications and should end with several more, but it will not be much of a lesson in science unless it reaches down to a mastery of the fundamental principle that has such application. So, even tho our common pabulum of science must be, in the main, a course in fundamental science, it should at the same time be an exceedingly practical course, touching many fields of activity and giving a scientific outlook toward the problems of life.

This work must be taught in a scientific way. It must be rich and practical in its subject matter, but it must be equally valuable in its method. If the common populace is ever to come to have a full measure of appreciation of science and faith in science, it must first come to know the scientific method, and to be imbued with the spirit of science. It must come to know the difference between things proved and things guessed at, between knowledge and prejudice. This state of mind can best be brought about by thoroughgoing scientific work.

The "required-of-all" science must be fundamental science, and not special or applied science, because it must be wide in its scope, ministering to the common needs of all, and of equal value to all. Agriculture, for example, should not be required of all, because any good course in agriculture should contain many things which are of the highest value to the future farmer, but which are of little value to people of other callings. Yet there are many things in fundamental science which have an agricultural outlook and application, which all of us should know, so that we should not thru ignorance as citizens stand in the way of a proper development of this fundamental industry. Such a thing, for example, is the dependence of green plants on certain fertility elements in the soil and the imperative necessity that agriculture be so conducted as to preserve this fertility of the soil. We all have a common interest in this and some common duties to perform in regard to it, which only some knowledge of the situation can guarantee that we will perform.

My third proposition is a little more complex and a little more definite than the others. It is that two years of work in science of the character

indicated above should be required of every student who stays in high school long enough to do it; that the first year of this work should be devoted to subject matter drawn mainly from the present three physical sciences, namely: physics, chemistry and earth science; that the second year be devoted to subject matter drawn mainly from the three biological sciences, botany, zoology, and hygiene and sanitation. Where junior high schools exist, this same work may be done in the eighth and ninth grades, or in the seventh, eighth and ninth grades. It is not so much in the interests of this work itself that it be begun earlier in the child's education, as it is that it be out of the way as soon as possible, in order to make more room for other science later in the high school course.

Under our present system, or rather under the lack of system in our present way of doing things, it is impossible that every high school student should come to know something of each of these six branches of science, even if each should be given in half year courses. We cannot expect three years of required science. And yet, I take it as obvious that each of these contains something that every one ought to know. Each surely contains something which, if generally known, would contribute materially to social well-being. Obviously then, the thing to be done, is to select from the six the things of most vital significance in social welfare, the things which have the most common value for all classes and conditions of people and organize them in the best possible fashion for presentation in the time that is available.

We are all familiar with what Dr. Bagley and others have repeatedly and forcibly pointed out in this connection, namely: that the common pabulum of knowledge must be as extensive as possible in a democracy. The common pabulum of scientific knowledge can not be very extensive, as long as we permit ten or a dozen different sciences to compete with each other for space in the required science program and leave non-scientific superintendents and principals free to follow their own caprice in the solution of the problems involved, without so much as the least bit of common advice or direction from us who ought to furnish the solution. It is imperative that we should agree on some common program which we can stand behind until it becomes adopted in the schools. It is possible, considering the limitations of our wisdom, that we may not, in every particular, agree on the best thing, but we had better agree on a poor program than not to agree at all. As long as each school is a law unto itself, as to what science shall be taught, how much and to whom, the sum total of science that is taught is of little potency in giving shape to social and industrial practices, because in it all there is almost no common pabulum. One person may feel keenly certain social needs, and be familiar with the remedy that science has to offer, but be wholly ignorant of other needs of equal importance and ease of solution. The next person may be in the same condition except that he is interested in and ignorant of a different set of problems. The next person who under our free elective system escaped all science, may be blissfully ignorant of the fact that science has any service to render to society. Thus there is lacking that unity that grows out of common understanding, and thus scientific practice lags far behind the actual total of scientific knowledge. If we could select two years' work in the elements of fundamental science and succeed in having it taught to all the people who stay in high school long enough to learn it, we should increase its potency for social good by from four to six fold, and at the same time we should be contributing largely to a broader sympathy, a commonness of understanding, and a singleness of point of view, all of which are so essential in democratic life.

The question naturally arises: Can we ever agree on such a common program? I believe that we can. There is a certain amount of logic involved in the situation, which at least partially removes it from the realm of mere human judgment or personal preference.

Obviously some general knowledge of fundamental science must precede any intelligent or scientific study of applied science. Obviously physical science,

much of which is fundamental to biological science, should be taught at the beginning of the course, notwithstanding the fact that in the past, we have usually done this thing backwards.

Then, there are certain obvious criteria, upon which it would seem all scientific minds might agree, and which can be used as standards by which to measure the availability of subject matter for this common course. The course should contain the science that has equal value to all classes and conditions of people; it should include that which the people most need in order to enable them to work together as communities, in solving community problems; it must include that which requires individual application, which can not be administered by a few experts; it must include some of the largest and most wide-reaching principles of science which give meaning and setting to all other science; it must include those facts and principles which have pertinent application to present pressing social problems. These and possibly other criteria constitute a sort of score card by which subject matter may be judged as to its fitness for this course in common science.

Allow me just a word as to the elective science. In a small high school, with a single prescribed course, possibly, the two years is all the science that should be attempted. In a slightly larger high school in which a little election is possible, doubtless household science for the girls and agriculture for the boys, should be the first additional science offered. In the larger high schools as many year courses in the special sciences and applied sciences, such as physics, chemistry, botany, zoology, agriculture and the like, may be given as there is demand for. These year courses should be so organized and taught that each might be the equivalent of a first semester course in the subject in college. This would make science work in high school as valuable for the future college student as is high school Latin or mathematics today. Of course all these courses, unless it be the agriculture and household science, for certain groups of students, should be purely elective.

Such a program of science work for the high school is at least a logical and a sane program. It is at least a hundred times better than no program at all, which condition we people, who boast of our power to think straight uninfluenced by personal prejudice, have not only endured, but have actually brought about by our over zealousness as individuals or small groups for the particular branches of sciences to which we have been wedded respectively. Let us live up to our boast of sane thinking and crystalize something definite out of the chaos that we have created.

As to the method of organization of the material of the proposed course in required science, I wish to make one point. Shall we organize the material of this course after it is selected, according to the special science method, the project method, or some other brand of general science? This point, I think we should leave open and unsettled. We are probably not ready to settle it, and it is nothing like so important that we settle it as it is that we agree on the nature of the subject matter that shall constitute the course. This point, after all, is nothing but a matter of method. General science is not a new science; it is not a different subject matter. It is simply a method of organization and attack. The project method does not necessitate or contemplate a different subject matter. It may be possible to get the same outcomes by using different methods, providing these different methods are applied to the same material.

One more point and I am done. How can this program be put into practice? In the end, it will mean that text books will have to be written to fit the idea. We are not so much seeking a plan today that can be put into practice tomorrow, as we are seeking to set up an ideal toward which we should strive. The text books will come, and soon, if we can succeed in getting sufficient backing for the idea. In the meantime, however, we can come very near to carrying out the idea with books that are already available. Some texts in general science now available will answer very well for the first year of the

required course, and some texts in general biology may do in a passable way for the second year of the course; or better, some combination of books could be used for this. Furthermore, this conference could help, by getting out a syllabus of the course, and this ought to be our next task.

At the close of his paper Professor Pricer, presented a resolution the content of which had been previously gone over and discussed individually by several members of the committee on Correlation of the Sciences. The text of the resolution is as follows:

Resolution Concerning the High School Science Curriculum

Whereas, a more efficient and more extensive general education in science is highly necessary in the interests of social welfare, and

Whereas, under the present chaotic condition of science instruction, especially in the first two years of the high school, such instruction seems to be losing ground, instead of gaining, notwithstanding the rapidly increasing need for training in science, as the problems of society grow more complex, and the rapidly increasing ability of science to meet these social needs, and

Whereas, it is obvious that the present unsatisfactory condition of science instruction, and the decline of science studies in popular favor, is due, not in the least degree, to any discovered inherent faults of science itself, as educational material, but rather wholly due to certain external conditions and tendencies, which have grown up more or less fortuitously, in recent years; such as the tendency to multiply the number of slightly different types of science available for high school instruction; the tendency of science teachers to divide themselves into small groups, each devoted to the interests of some narrow branch of science, or special type of science, or method of organizing science, and to advocate these to the utter neglect of other equally important parts or phases of science education; and finally the tendency toward complete free election of science studies which leaves to the caprice of the high school pupils the important question as to whether or not he shall study any science.

These tendencies have almost completely destroyed all united effort in support of the common interests of science instruction, and thru the turmoil and conflict that they have led to, have destroyed the confidence of non-scientific people in the educational value of science. We can correct this condition, only by uniting solidly behind some definite, sane and workable program for science instruction.

Therefore, be it resolved, by the Science Sections of the Illinois High School Conference, in joint session assembled,

That we pledge our united support to the following program for science instruction in the high school:

First: Two full year-courses, in what shall be essentially fundamental science. This work to be given in the first two years of the high school, or where junior high schools exist, the same work may

be done, in the eighth and ninth grades or spread over the seventh, eighth, and ninth grades. This work, which is intended as the common pabulum of scientific knowledge, should be required of all students in so far as it is administratively possible.

Second: As many full year courses in the applied sciences, and in the special sciences, should be given in the later years of the high school course as there is demand for, and as the size of the faculty and equipment will permit. These latter courses, unless it be in the case of agriculture and home economies for certain groups of students, should be purely elective, and should be so organized and taught that each year course may answer as the equivalent of a first semester course in the subject in college.

After rather extensive discussion, involving a few minor changes in the resolution as first presented, a motion for adoption of the resolution passed unanimously. As an outgrowth of the discussion of the papers presented at this session the Chair was asked to appoint a committee with representation from the various high school sciences whose duty shall be that of presenting to a later meeting of the science groups recommendations concerning the content of such a two year science course as is suggested in the resolution. The following constitute the membership of this committee: J. L. Pricer (Chairman), Normal; A. W. Nolan, Urbana; J. W. Shepard, Chicago Normal College; Miss Florence Harrison, Urbana; Miss Mable Stark, DeKalb; Raymond W. Osborne, Francis W. Parker School, Chicago; John P. Gilbert, Carbondale.

PART IV

University of Illinois Library High School Library Exhibit

Arranged for the High School Teachers' Conference November 21-23, 1918

One of the features of the High School Conference held at the University of Illinois was an exhibit of books, pamphlets, pictures and maps relating to topics of the day which would be of interest to high school teachers and especially to teacher librarians. The appropriation for the average High School library is hardly large enough to buy the books needed for reference and collateral reading, the time of the teacher in charge is very limited and there is little opportunity to look out for and obtain some of the valuable material on almost every subject which is issued free or at a very small price. Many of these pamphlets are issued from authoritative sources and constitute a valuable addition to any library, so in this exhibit an effort was made to call attention to some of the best of this class of publications.

There was exhibited, with additional material, the aids suggested to teachers in the "Illinois High School Visitor's Bulletin on High School Libraries" for organizing and stimulating interest in the school library. A few choice editions of the classics usually read in the High School, a collection of attractive stories of heroes and adventure, nature books, and biographies interesting to the High School students were displayed as suggestive to the teacher of what books to select for the library.

The fact that the High Schools are putting in courses in agriculture and that the problem of the collection and care of the bulletin material is becoming a vexatious one made the table "Agriculture in the High School" of especial interest. Seventeen large cloth posters setting forth the work of the States Relations Service of the Agricultural Department were interesting and suggestive of the help the government will give in connection with the teaching of agriculture in the high school. A case of slides on poultry, horses, sheep and cattle, illustrated some of the many sets of slides that this new extension service will lend to any school or teacher on the payment of transportation. Each set of slides is accompanied by a lecture on the subject. A number of recent books and bulletins were displayed and there was a sample collection of state and government bulletins classified by subject and arranged in pamphlet boxes. A number of different kinds of pamphlet boxes and pamphlet binders and their use together with other library aids were shown. The care of clippings was also demonstrated. In connection with the subject "Agricultural bulletins and their care" the following points were emphasized:

1. The collection should be the property of the School and the teacher in charge should be provided with the proper equipment for taking care of it.
2. The pamphlets should be stamped with the name of the School and classified by subject.
3. Boxes should be used to hold the pamphlets; arranged on shelves by subject, and labeled plainly.
4. Bulletins much used in class may be put into Gaylord pamphlet binders and stapled in.
5. A card catalog should be made, two cards for each bulletin, author and subject. Cards should be filed alphabetically in a drawer.
6. Clippings. Valuable reference material clipped from newspapers and periodicals should be dropped in large manila envelopes and filed by subject in the vertical file.

The History table contained many pamphlets which teachers may obtain free or at very small cost. The National Security League, 19 West 44th Street, New York, sent copies for distribution of their publications which are of especial interest to teachers of patriotism. The Committee on Public Information, Washington, D. C., and the American Association for International Conciliation, 407 West 117th Street, New York City, sent many interesting pamphlets which set forth in an authoritative way the historical background and the immediate causes of the war. The Independent and the Literary Digest sent for free distribution pamphlets telling how to use these magazines in the teaching of History, Civics, English, Geography, Public Speaking and Journalism. The National Board for Historical Service has published through Charles Scribner's Sons a very interesting volume entitled "War Readings" which includes some of the best prose and poetry of the war, as well as reproductions of the most interesting war posters issued by the Allies; this volume costs 75 cents. McKinley Publishing Company, Philadelphia, Pa., sent copies of their publications including their War Reprints which were issued as the monthly war supplements to the History Teacher's Magazine and the Historical Outlook. These reprints sell for 20c a piece with liberal discount for orders in quantity. They have also been arranged in a volume entitled "Collected Material for the Study of the War," 65 cents.

Among some of the most interesting maps were Literary Digest map of the Western front and the Outlook Reference Collection of war maps, each selling for $1.50. A set of new and authoritative maps from Denoyer-Geppert Co., Chicago, called the Harding European History series, issued for the use of teachers of the Student Army Training Corps, were displayed. There are twelve maps (six sheets), wall size, and sell for $10 to schools. The American Geographical Society, Broadway and 156th Street, New York, sent announcements of their official set of maps just issued. These are wall size about

sixty in number, and will sell for $12. They will be invaluable to the teacher and student of the conduct of the war as well as in the study of the problems relating to peace and reconstruction.

A display of pictures and books on the Pageant was loaned and arranged by Mr. William Chauncy Langdon, Pageant Master of the University. The pictures were from Mr. Langdon's own collection, and illustrated some of the pageants he has staged. One of special interest to Schools was the pageant of Thetford where the idea for the Campfire girls originated. Among the best books for a High School library on this subject were Percival Chubb and others, "Festivals and plays"; Constance Mackay, "Costumes and scenery for amateurs"; and "How to produce children's plays"; W. C. Langdon, "Compass points in the Festal Drama," an article which appeared in The Drama, August, 1917, is especially good in illustrating the different possibilities of the Pageant.

Perhaps the most popular exhibit was the one on the High School drama. A number of books on the drama as well as plays suitable for high school production were shown. A few of the books of interest to the director of dramatics were: B. H. Clark, "How to produce amateur plays", Little Brown, Boston; Emerson Taylor, "Practical state directing for amateurs", E. P. Dutton, New York; Constance Mackay, "Costumes and scenery for amateurs" and "How to produce children's plays", Henry Holt, New York; James Young, "Making up", M. Witmark & Sons, New York; B. R. Lewis, "Technique of the one act play", Luce & Co., Boston; E. W. Curtis, "The dramatic instinct in education", Houghton Mifflin Co., New York. The following lists will be of service in selecting a play for high school production: "Choosing a play", by Gertrude E. Johnson, H. W. Wilson Co.; some of the best dramas by F. K. W. Drury, H. W. Wilson Co.; "Plays for Amateurs", Drama League of America, Boston; "Actable one act plays", Chicago Public Library; "Annotated Index to plays for children", St. Louis Public Library; "List of plays for High Schools," Drama League of America, Chicago; "Fifty one-act plays", by A. M. Drummond from Quarterly Journal of Public Speaking, October, 1917. There were also catalogues and announcements from many of the Dramatic publishers for distribution.

On another table was exhibited government documents of general interest and a list of the best "Aids in choosing government documents" was distributed. Special attention was called to the new "Guide to United States Government publications" by W. I. Swanton (U. S. Education Bureau Bulletin, No. 2, 1918). Other aids suggested were: U. S. Superintendent of Documents, Monthly catalogue of U. S. documents. Government Printing Office. $1.10 per year.—U. S. Superintendent of Documents, Price lists of documents for sale by the Documents Office. Free.—U. S. Bureau of Education, Teaching material in the government publications. (Bulletin, 1913, No. 47) Bureau of Education, Washington, D. C. Limited edition free.—Uni-

versity of Illinois Library School. List of inexpensive maps published by national and state departments, compiled by Florence R. Curtis. 1916. (In University of Illinois Bulletin on High School Libraries.) —U. S. Geological Survey. Selected list of 100 topographic maps illustrating physiographic types. Free.

Several cases were filled with official pictures showing the French Army and its equipment. These pictures can be bought from G. E. Stechert & Co., New York City, for 10 cents each. The Official American Army pictures were of special interest. The Government has had every phase of the war photographed and a collection of these pictures should be of absorbing interest showing the enormous undertaking of preparing a great nation for war, mobilization, equipment, transportation, foreign training quarters, and even pictures of the Americans in the front line trenches. These photographs can be obtained from the Bureau of War Photographs, 6 West 48th Street, New York City.

The best material for the Rehabilitation of the wounded soldier came from the Federal Board for Vocational Education; the Red Cross Institute for Crippled and Disabled Men (New York City), and the Surgeon General's office, which issues the new reconstruction periodical "Carry On."

Other features were an exhibit from the United States Food Administration showing that the need for conservation is by no means past. An exhibit of posters showed the work of the A. L. A. in camp hospital and overseas service. A number of pictures and slides were loaned by the U. S. Forestry Bureau, which also sent material on the National Parks for distribution.

Half a dozen food conservation posters in color made by the school children in France and several beautiful French war posters gave color to the exhibit.

Reported by Miss Josie B. Houchins.

PART V
SECTION MEETINGS

1. Administrative Section

This section is now composed of the Illinois High-School Principals Association. The program as previously announced was modified somewhat owing to the absence of some of the speakers. We are giving here abstracts or full copies of such of the papers as have been reported. The minutes of the business session are also appended.

The first subject to be presented was **"Plans for the Boys' Working Reserve for the Coming Year,"** by Dean Eugene Davenport of the Agricultural College. An abstract of Dean Davenport's address follows:

The need for food production in America has not been lessened by the signing of the armistice. In fact, the need for increased food production is greater than before the cessation of hostilities. In addition to feeding the Allies, it will be necessary for the United States to assume the responsibility of providing food for the central empires. Soldiers demobilizing and returning from the front will not adequately supply the demand for farm labor. It will be necessary, therefore, to use the Boys' Working Reserve even more extensively than last year.

It is very important that every country boy who is already engaged on his father's farm should be enrolled in the Boys' Working Reserve. Even boys under sixteen years of age should be urged to do this. Boys in high school over sixteen years of age, whether they have had farm experience or not, should be enrolled in the Boys' Working Reserve. The boys who undertake this work are enrolling in national service, which has patriotic features corresponding to although not equaling the service of the soldiers at the front. Boys going to the farms will not be able to secure such high wages as those going into industries, but they should make necessary sacrifices in wages in order to perform this patriotic duty.

The preliminary training which the boys in the high schools will receive in order to get them ready for work on the farm does not propose to instruct them in the theory of agriculture nor in the scientific principles involved in farming. The purpose will be to instruct them in the processes and equipment which the boy will be expected to know when he presents himself as a helper in the business of food production. It is highly important that both the school and the pupil make no mistake at this point. The boy is going as a helper in farm work, not as a partner nor as a business adviser.

The course of training will be based on the Farm Craft Lessons. These lessons may be modified in various communities according to local needs. They deal with craftsmanship rather than with the scientific principles underlying agricultural practice. They must be considered as outlines and suggestions rather than as iron-clad courses to be administered without alterations. They are to be learned, not casually read for entertainment.

In studying these lessons education is not to be sacrificed. The educational point of view must be kept uppermost, and because this special training has educational value it should be given credit in the school courses. Full credit, however, should be conditioned upon faithful service, and in order to

see that such service is actually rendered and that the boy has a fair opportunity to render it, the school should send its own representative. The school should follow the boy to the field both as friend and as inspector.

The Government cannot supply teachers. There is no alternative but to expect the high schools either to provide this teaching from members of their own staffs who have the skill, or to secure the instruction from outside sources. In general, the schools, being accustomed to the business of instruction, are competent to manage the methods necessary to meet this emregency. In the neighborhood of every school is plenty of material in the shape of teams, wagons and implements; and in the persons of retired farmers, teamsters, implement men, and through such special craftsmen as harness makers and sailors, a vast amount of skill in handicraft may be enlisted for teaching purposes. It is hoped that the schools of the United States will be earnest and untiring in the utilization of the material and the men which may be enlisted for this purpose. This service must not be perfunctory or dispirited. It must be aggressive and enthusiastic. It is the teacher's great opportunity and duty in lieu of active service at the front.

Often the school is not the best agency for actually placing the boys, although during the last year many high schools succeeded remarkably well in placing some of their boys. On the other hand, the Council of Defense has been found a better agency for the labor side of this enterprise. It tries to secure good conditions on the farm for the boys, and it tries to be sure that the boys are properly prepared so that the farmer will not be disappointed.

There are certain special precautions which the Boys' Working Reserve attempts to take. They are as follows:

1. Establish a system of inspection to insure that the boy is faithful and efficient and lives up to his contract.
2. Insure against exploitation of the boy by the farmer in any way whatever, although the wage must largely lie with the farmer.
3. Do everything possible to insure mutually desirable social relations between the city boy upon the one hand, and the family and the neighborhood upon the other.
4. Guard against the natural impulse of some farmers to hire a particularly good hand away from a neighbor at a slight advance, thus demoralizing the Boys' Working Reserve and doing an injustice to right-minded farmers.
5. Hold in check as fatal to the purposes of the Boys' Working Reserve the natural impulse of some boys to "jump" one job for another that promises more pay or "a better time."

These Lesson Leaflets and these Practical Exercises are *not* intended for high school boys who are living upon the farm or for others who have had farm experience. For these pupils the schools should organize some definite course in agriculture, using for the text such a book as Mosier's "Soils and Crops," Rand McNally and Co., Water's "Essentials of Agriculture," Ginn and Company, or other text suitable for the region. *Do not mix these two classes of pupils.*

"The Adaptation of the Smith-Hughes Law to Community Needs" was next presented by K. G. Smith, Federal Agent for Industrial Education, Indianapolis. The following is substantially the content of Mr. Smith's address:

Have you ever heard a man say, "Industrial education is a fine thing, we ought to do something but—"? Let us eliminate a few buts.

The difficulties of developing industrial education and the methods to be used do not depend upon the population. Difficulties to be met and methods to be employed depend, aside from financial considerations, upon three things

(1) The kind of industries represented
(2) The attitude of employers
(3) The number and age of employees.

Population statistics may or may not be an index of these fundamental things. Each one of them needs to be studied in a community. The kind of industries and numbers employed cannot be changed by a Supervisor of Industrial Education. Employers can, and often must be, educated by him before progress can be made in educating employees. As this is largely a matter of personal contact we will not discuss it further here but confine our attention to analyzing community needs.

Kinds of Communities

The problem of the large, highly developed, industrial community has been attacked successfully in many localities. It is the less definite problem of the smaller community that we shall take up.

There are three classes of communities to be considered for which it is difficult to map out an industrial education program.

(1) The community in which there are a few highly diversified industries with comparatively small numbers employed in each.
(2) The community in which there are dominant industries but such that very little training for them is required.
(3) The community in which there is very little industry of any sort, the chief interests being agricultural and commercial.

These classes will be taken up and considered in turn.

(1) The community in which there are a few highly diversified industries with comparatively small numbers employed in each.

Such a community as this is one of the most difficult in which to organize industrial education. The whole problem is so complex and the industrial field so small that it seems impossible to give specific training for any one of the industries. There are three possible developments.

(1) The part-time school
  (a) Trade extension
  (b) Trade preparatory
  (c) General continuation
(2) The evening school
(3) The shop training school

(1) The Part-Time School

The part-time school is intended for younger employees and is dependent either on legislation or the good will and broad mindedness of an employer. Whether the school shall be of the trade extension, trade preparatory or general continuation type depends on the industries represented. If they are such that little or no manual skill and technical knowledge are required the trade extension and trade preparatory schools are out of the question and the general continuation school is what is needed.

It is also possible in a school of this character to give preliminary training in a trade other than that in which the person is employed, in other words a trade-changing course may be offered. It is conceivable for instance that a girl who worked in a hosiery mill might take stenography. A boy who worked as an office boy might learn the fundamentals of sheet metal work. Many of those engaged in unskilled and semi-skilled work, however, are in need of general continuation subjects taught in a vitalized way. Home economics is considered to be one of these subjects for girls who have entered upon employment. Unless 50 percent or more of the time is given to home economics subjects, the class is considered to be an industrial and not a home economics class. This is an important point to be kept in mind because of the 20 percent maximum allowable for home economics instruction.

As to the number of hours a week to be devoted to this work, I favor in a community of this kind, the four hour a week plan, especially when the work is being started. An arrangement of this kind does not require a complex

organization and is an easy condition for an employer to meet, as only one boy or girl need be gone at a time if several plants join together to form a part-time class. The week about plan has also been tried, most successfully in the case of highly developed industries. For this plan a more extensive curriculum is necessary resembling regular high school work more closely.

(2) Evening Classes

Evening work is of course for older men and women and if subsidized by Smith-Hughes funds must be supplementary to daily employment. Trade extension schools are the only type of evening schools recognized by the Smith-Hughes law. Supplementary or trade extension subjects group themselves under three heads: trade science, trade mathematics, and trade drawing.

It is difficult to teach trade science to a class composed of representatives of more than one trade; in fact, I believe that a class must be composed entirely of representatives of one trade or closely allied trades if trade science is to be successfully taught. If the numbers in any one or in allied industries are very small, a trade science class may be out of the question.

With a carefully laid out course trade mathematics may be taught in the same class to representatives of two trades and, so far as my experience goes, I should say not more than two. In the same way by carefully laying out a course, trade drawing may be taught to representatives of three different trades in the same class, giving each group the specialized work for its trade. I realize that some have taught trade science, mathematics and drawing to representatives of more trades than here stated. It can be done, but is less efficient and not advisable unless absolutely necessary. Fundamentals of all three lines of related subjects are often the same for several trades; specialization must, however, come early in the course. This work as described here could receive Federal aid provided the men were engaged in the trades for which supplementary work is given.

(3) The Shop Training Plan

The third scheme for attacking the problem of diversified industry is the shop training plan. In accordance with this plan instruction is given in the actual manipulative processes of the trade or occupation *in the plant itself* in a systematic way and under a trained instructor. These instructors are employees of the plant and are in charge of instructing all green help, both men and women. The training is given on production work in accordance with a definitely planned course of instruction.

The Smith-Hughes law provides for the training of these instructors or instructional foremen as they are sometimes called. They should be carefully trained in evening classes as shop instructors in their occupation and recognized as specialists in instruction just as other employees are recognized as specialists in production. The teaching work in the plant is in reality "practice teaching." The teachers thus trained form a valuable nucleus from which shop teachers can be drawn in the future as opportunity offers. They are in the meantime employed as teachers in the plant or shop.

Personally I know of no other way of giving instruction so effectively in diversified industries especially when manipulative processes are the chief element, and the necessary training period brief.

I have discussed at length these different types of schools because what has been said in regard to them in this particular type of community applies equally well in the other two types.

(2) The community in which there are dominant industries but such that very little training for them is required.

In a community of this kind there is little opportunity for an evening school if it must be confined to employees of the dominant industries. Evening courses for carpenters, plumbers and sheet metal workers might be possible in such a community. To meet the needs of the *dominant* industries, however, either the part-time or the shop training school or both must be organized.

The Part-Time School

In cases where plants are large, the part-time school can best be located in the plant itself. When this is the case the plan of one hour a day instead of four hours a week is often adopted. Either plan will get results. A very interesting developing of this work is the trade preparatory school. In accordance with this plan young employees entering the industry are given intensive training for a short period fitting them to enter upon their work more advantageously. This work may be given for a period of one week or two weeks more or less eight hours per day. It may then, accompanied by other subjects, be continued as ordinary part-time work occupying four to eight hours per week. A minimum of 144 hours per year must be devoted to instruction to meet the requirements of the Federal law. Care should be taken in developing work of this kind to avoid over specialization by following the intensive training period by the regular part-time work.

The Shop Training Scheme

The shop training scheme is particularly applicable to the large plant of this kind because instructors may be employed who devote their entire time to instruction and there may be a separate "training department." A combination of the shop training and part time plans is highly desirable and prevents a tendency to over-specialization in shop instruction. Any supervisor of industrial education should strenuously oppose any system which tends to "tie a workman down" and make a mere automaton of him. A ladder for promotion should be a part of the training scheme.

A very effective method of conducting this work is to have the person in charge of the part-time school direct the instructor training class in the evening. This enables him to coordinate the shop and class room work and to make the shop training effective by means of a carefully organized course.

The training of these shop instructors is a special problem, too large to be discussed here. I will only say that it offers a most inviting field for investigation. Let me say, too, that it is one of the fields in which a real earnest manual training teacher with practical experience and an appreciation of the vocational problem can render a great service. The main point to be kept in mind is that the men need to be taught how to organize and teach, not how to perform the various trade processes comprised in their occupation.

(3) The community in which there is very little industry of any sort, the chief interests being agricultural and commercial.

The Smith-Hughes law provides aid for agricultural courses but a discussion of them is beyond the bounds of this article. Commercial education can receive Federal aid if classes are conducted on a part-time basis. Such subjects as stenography, typewriting, bookkeeping and salesmanship may be offered for employed persons or for persons holding definite written agreements to employ them when properly trained. General continuation courses for girls employed in stores are also feasible and highly desirable.

The fact that evening courses must be supplementary to daily work limits their development in industrial subjects in a community of this kind. In some cases courses may be offered for men engaged in the electrical, printing or building trades. It is also interesting to note that Home Economics is considered to be supplementary to the daily employment of any woman. Hence this work offers an opportunity in any community.

The Unit Trade School

Nothing has so far been said in regard to the all day or unit trade school. A school of this character can best be organized in a large industrial center. The first and earliest development is most naturally an industrial or trade course in a high school. Such a course must be in session nine months in the year and one half of the time of the pupils spent on practical work. The practical

work may be done in the shop, if properly equipped, or on actual jobs in the vicinity. There is also a General Industrial School provided for in the Smith-Hughes law. Such a school is intended to provide training for certain groups of trades such as the building trades or the electrical trades and involves a less degree of specialization than the unit trade school. The purpose of such a school is the same as that of any other industrial school or class, viz: to fit for useful employment. The length of course and hours of instruction may be modified in cities of less than 25,000. There is nothing whatever in the law to prevent the establishment of Unit Trade Schools in cities of less than 25,000 in case it is possible to do so and as I have said population is not an index of the kind of industrial education needed or the methods to be used.

In the future I hope to see some development of a State Trade School in states in which no city is large enough to support its own trade school. The expense of leaving home prevents the very boy who wants to learn a trade from going to a State Trade School. Possibly this difficulty may be overcome in a measure by scholarships offered by the State itself, by labor organizations or by employers.

It is well for us all to remember that the Trade School ought to be a development of a highly industrial community. It is the apex and not the foundation of an industrial education pyramid.

On account of a late train which failed to connect at Indianapolis, Mr. E. E. McNary, who was to have spoken on "The Training of Tradesmen to Become Vocational Teachers," was unable to be present on Friday.

The next general topic was **"The Smith-Hughes Act in Illinois High Schools."** This was discussed from several different angles by Miss C. L. Davis, Supervisor of Home Economics Education; Professor A. W. Nolan, Supervisor of Agricultural Education; J. Stanley Brown, Chairman of the Committee on Vocational Education, and E. A. Wreidt, Secretary of the Committee and Supervisor of Industrial Education.

We give below the papers or abstracts of papers of such of these speakers as have furnished us copies.

The Smith-Hughes Act As Applied to Home Economics Courses in Illinois

MISS C. L. DAVIS

Vocational home economics under the Smith-Hughes Act has for its controlling aim the training of girls for intelligent efficient home making. In no way does it undertake fitting for wage paid service such as domestic service, work in cafeterias or the needle trades, the specific object of the training being to fit for useful employment in home making.

When the Smith-Hughes bill was first framed it contained no provision for home economics education. Just before the bill was acted upon by Congress, some two or three women interested in the education of the girls of our country endeavored to have the bill modified so as to include definite provision for home economics education. Failing in this they were able to have it included with the trades and industries, the bill reading "for trades, home economics, and industrial education," one-fifth of the money appropriated for trades and industries being allotted to work in home economics.

Together with this money the work in home economics has, in a very human way, inherited some of the requirements for the work in industries. As the six-hour day with fifty percent of the time devoted to practical work

obtains in all good trade schools, the Smith-Hughes Act requires that in trades, home economics, and industries the instruction extend over not less than nine months per year and not less than thirty hours per week. Provision is made for modifying this requirement to meet the needs of the community in towns of less than 25,000 population.

In order to meet this requirement special adjustment of school programs has been found necessary in the cities of over 25,000 population, but as most of our schools are in towns of less than 25,000 population, in which the five-hour school day is permitted, the big problem has been merely the harmonizing of existing conditions with the requirement that fifty percent of the school day be spent upon practical work.

In home economics, "practical work" may be interpreted to mean home economics subjects such as the study of foods and clothing, house furnishing, and a study of related science or related art. A half day devoted to practical work may be spent upon home economics subjects exclusively, an organization we refer to as curriculum I, or it may be spent upon home economics subjects and related science or art, this latter organization being known as curriculum II. Curriculum I is advocated only in special cases. Curriculum II is the one under which most of the work in our schools has been planned. Using it, existing courses may be easily adjusted to meet the ideals outlined by the State Board. In a five-hour school day, ninety minutes, that is three-tenths of the day, must be spent upon home economics subjects, with an average of sixty minutes per day to be spent upon related science or related art.

By related science we do not mean science work with all the real science taken out, but we do mean good stiff work in science in which definite application is made to problems in home making,—physiology in which the application is made through home sanitation, first aid, and home nursing; chemistry and physics with definite application to problems in the household.

In related art we ask that the work be not merely drawing and painting but rather a study of the fundamental principles of design with definite application to costume and house furnishing. This course gives the student a background for appreciation of what is artistically good. It also makes for simplicity in costume as well as in the furnishing of the home. Such a course in design is most difficult to have properly given. Even where drawing and painting are given through the grades more drawing and painting is given in the high school. Or if a course in design is given it is merely the conventionalizing of pleasing forms to be used as borders or as surface coverings. Such a course, together with a study of historic ornament, is valuable as a second course in design but will in no way take the place of the course in fundamental principles.

In many of our schools we find home economics subjects being offered instead of real science subjects. In our smaller schools this is on account of the cost of the science equipment. A course in general science requiring a small equipment is offered in the first year, and home economics subjects are offered to the girls in the second and third years, with manual training or agriculture for the boys. Even where the school is well equipped for all science courses, we find the girls taking the home economics work in place of the regular science. I have been much interested in the reasons given for this. Some of our school-men say it is because girls do not like science subjects. My reply is that that in itself is a condemnation of the way the science is taught. Others say, "Girls do not take science because they can not think science." I can not believe that this is true. If it were true it would be the best argument against universal suffrage that I have ever met.

Under the interpretation of the Smith-Hughes law all girls are required to take science or art at the same time they take the home economics subjects. It may be included as related science or related art in the half day devoted to practical work, as advocated in curriculum II, or it may be included as regular science or art in the non-vocational half day as advocated in curriculum I, but it must appear as part of the program of each girl in the Smith-Hughes classes.

In order that this may be no hardship and that it may little upset the general organization of the program, it is necessary to see that the girl registers for work in home economics at the same time she registers for work in science or in art.

Few principals wish to advocate courses which will not fit the girls to enter college. Far be it from me to say that our girls require less English or language or history or science than they have been having, or even less mathematics if this same mathematics is a stepping stone to more advanced work. What we want is that our girls may all have all of these and at the same time have good broad work in home economics.

Ninety percent of our girls marry. Ninety-three percent of these do their own work. What we most desire is that these ninety-three percent meet their home duties with such trained efficiency that they will be able to take care of their homes and still have leisure in which to enjoy the music and the literature they have studied. With this end in view, our courses in home economics in the high school should be so planned that they will not only give the girl an appreciation of the problems to be met but also technical skill in handling them. In order to get this technical skill, the girl needs practice and still more practice, much more than can be crowded into a high school course. For this reason and as a means of making the work practical, home projects are advocated as a definite part of the course. These home projects require close cooperation between the school and the home and should insure an added interest in the work.

Elaborate equipment is not required in the courses in vocational home economics. The equipment should approximate that in the average home in the community. It should include not only a laboratory for the study of foods and of clothing but also another room equally well equipped to be used as a dining room in the meal serving course.

When we first began talking vocational home economics we advocated offering it as a distinct home economics course. On finding that almost without exception the so-called home economics courses have at best a small enrollment, and feeling that all of the girls in the high school should take at least one year of this work, we are now most anxious to have this work in home economics offered as part of the regular high school course. The girl may take two or even three years of this work and still fulfill the entrance requirements for University of Illinois or the University of Chicago. (See suggested programs.) Or she may take one year of intensive work and still fulfill the old-time classical requirements of such colleges as Vassar or Wellesley.

Our high schools may have elaborately equipped departments with well organized courses in home economics, and teachers well prepared in the work, and still the work will not be popular simply on account of the attitude towards this work on the part of the person registering the girls. I would not ask that these persons be "home economically minded," but I would ask that they be fair minded; that they not only have a proper appreciation of language, history and mathematics as they appear in the school program, but that they also have a proper appreciation of science subjects and home economics; that they realize that, inasmuch as it would be impossible for pupils to become proficient in Latin or English or mathematics if they were to register for an occasional isolated semester's work, just so will it be impossible for them to do passable work in home economics if registered in such a haphazard way. Realizing this I would ask that they register the pupils as sympathetically and with as much care and intelligence in the home economics and science as they have heretofore shown in registering them in the purely academic work.

Many of our high school courses have work in cooking and sewing extending through four years. These courses should be revised so as to contain definite work in home nursing, household management and house furnishing. (See suggested organization of home economics subjects.) The content of many of these courses can well be improved. Not infrequently we find the first year high school students repeating the work of the elementary grades. When good

work has been given in the grades it must be used as a foundation for the work in the high school but should not be repeated. The high school work in foods can then begin with the meal serving course, and in sewing with the elementary dress making, a gain of a whole year in the work. We must appreciate that there is a type of home economics work suited to the elementary grades and another type suited to the high school, and realizing that, see to it that our high school courses have sufficient subject matter to make them worthy of high school credits. Our methods must be improved, particularly in the work in sewing; we must realize that mere showing and telling is not teaching; that work so presented has little educational value. Our teachers must be able to analyze each problem and to present it through class instruction by means of discussion, illustration and demonstration.

Evening classes are an important type of vocational home economics. We are most desirous of seeing this work extended. The attendance at evening classes is generally restricted to young women who are employed during the day. These classes should not be discontinued, but additional classes should be organized for the home makers who are now facing new and unusual conditions, caused by the high cost of living and by the conservation in food stuffs and in materials for clothing. For them these so-called "evening classes" may be held at any time during the day or evening which may be convenient, the work being organized along lines which will meet the needs of the experienced housekeeper. Other classes should be organized for the young wife who has gone directly from employment in shop or office to the home and who should have instruction in the fundamentals of home making. For her the classes in home management, in household accounting and in home nursing will be quite as important as the work in foods and clothing.

With the great demand for labor, many of our school girls are going into shops just as soon as the school laws permit. Realizing the handicap that this entails and that these workers of today will be the home makers of tomorrow, the State Board urges the school authorities to cooperate with the employers in establishing part-time classes which will meet the special needs of this group. Such part-time classes may include not only home economics subjects but also studies intended to increase general civic intelligence.

Suggested Programs in Vocational Home Economics

Fifty percent of school day of pupil must be spent upon practical work.

Curriculum II. Practical work includes home economics subjects and related science or related art. At least 90 minutes of a five-hour day or 120 minutes of a six-hour day must be spent upon home economics subjects.

Program I

First Year	Periods per week	*Second Year*	Periods per week	*Third Year*	Periods per week	*Fourth Year*	Periods per week
English	5	English	5	English	5	English	5
Mathematics	5	Mathematics	5	Language	5	Language	5
Physiol. (1 sem)	5	Household Chem.	7	History	5	History	5
Design (1 sem).	5	Home Economics	10	Elective	5	Elective	5
Home Economics	10	Music	2	Physical Ed.	2	Physical Ed.	2
Music	2	Physical Ed.	2				
Physical Ed.	2						

Program II

English	5	English	5	English	5	English	5
Language	5	Language	5	Language	5	Language	5
Physiol. (1 sem)	5	Household Chem.	7	History	5	Hist. & Civics.	5
Design (1 sem).	5	Home Economics	10	Mathematics	5	Mathematics	5
Home Economics	10	Music	2	Physical Ed.	2	Physical Ed.	2
Music	2	Physical Ed.	2				

Program III

First Year	Periods per week	*Second Year*	Periods per week	*Third Year*	Periods per week	*Fourth Year*	Periods per week
English	5	English	5	English	5	English	5
Mathematics	5	Mathematics	5	Language	5	Language	5
General Science	5	Household Chem.	7	Household Physics	7	History	5
History	5	Home Economics	10	Home Economics	10	Elective	5
Music	2	Music	2	Phys. Ed.	2	Phys. Ed.	2
Phys. Ed.	2	Phys. Ed.	2				

Program IV

English	5	English	5	English	5	English	5
Mathematics	5	Mathematics	5	Language	5	Language	5
Physiol. (1 sem)	5	Household Chem.	7	Household Physics	7	History	5
Design (1 sem)	5	Home Economics	10	Home Economics	10	Civics & Amer. History	5
Home Economics	10	Music	2	Phys. Ed.	2	Phys. Ed.	2
Phys. Ed.	2	Phys. Ed.	2				

Program V

For districts over 25,000 population having a six-hour school day.

English	5	English	5	English	5	English	5
Mathematics	5	Mathematics	5	Language	5	Language	5
Gen. Science	5	Household Chem.	7	Household Physics	5	History	5
History	5	Home Economics	10	Home Economics	10	Elective	5
Drawing & Des.	2	Home Economics	5	Home Economics	5	Phys. Ed.	2
Music	2	Phys. Ed.	2	Phys. Ed.	2		
Phys. Ed.	2						

Curriculum I. Fifty percent of school day of pupil must be spent upon practical work. Practical work includes home economics subjects exclusively.

Program VI

English	5	English	5	English	5	English	5
Physiol. (1 sem)	5	Chemistry	7	Mathematics	5	Mathematics	5
Design (1 sem)	5	Home Economics	10	History	5	History	5
Home Economics	10	Home Economics	10	Language	5	Language	5
Home Economics	10	Phys. Ed.	2	Phys. Ed.	2	Phys. Ed.	2
Music	2						
Phys. Ed.	2						

Program VII

Curriculum I may be used when home economics subjects are included in connection with a college entrance program prepared for a definite group of pupils.

Latin	5	Latin	5	Latin	5	Latin	5
English	5	English	5	English	5	Mathematics	2 or 3
Mathematics	5	Mathematics	5	English	2 or 3	Chemistry	7
Language	5	Language	5	Language	5	Home Economics	10
Phys. Ed.	2	Phys. Ed.	2	History	5	Home Economics	10
Music	2	Music	2	Phys. Ed.	2	Phys. Ed.	2

Suggested Organization of Home Economics Subjects

1. Principles of cookery.....one semester
2. Marketing, planning and serving of meals, housekeeping and household accounting.....one semester
3. Garment making and elementary dressmaking.....one semester
4. Advanced dressmaking.....one semester
5. House planning, home sanitation and house furnishing.....one semester
6. Textiles and millinery.....one semester
7. Elementary dietetics, including home nursing.....one semester
8. Home management, including expenditure of the income, organization of household, etc.....one semester

Under Curriculum I, courses 1, 2, 3, and 4 form the work of the first year, and courses 5, 6, 7, and 8 the work of the second year.

When the work extends through but one year, courses 1 and 3 should form the work of the first semester, and courses 2 and 8 the work of the second semester.

Under Curriculum II, courses 1, 2, 3, and 4 extend through two years, the sequence being arranged to meet existing conditions.

When the work extends through but three years, the elementary dietetics and home management should form the work of the third year, otherwise they should be placed in the fourth year.

When the work extends through but two years, courses 3 and 1 should form the work of the first year and courses 2 and 8 the work of the second year.

Professor Nolan's Paper (an Abstract)

The Illinois plan for vocational education in agriculture under the Smith-Hughes law provides:

1. For the training of teachers of agriculture in higher institutions of learning offering four years of agriculture beyond the high school. The course prescribed for teachers of agriculture includes fifty-two hours of technical agriculture and eighteen hours of education including six hours of practice teaching. This is a wise provision of the law, for evidently no system of vocational education could succeed in a state unless provision be made for the adequate training of teachers both in the subject matter and the methods of teaching the vocation.

Until 1921 the Illinois plan provides that teachers of agriculture may be certificated under the state law without the foregoing training.

2. Vocational agriculture under this law is to be given in public schools for children over fourteen years of age and in content beneath college grade work. The school prepared to do this work under the Illinois plan must have adequate equipment and maintenance to do the work satisfactorily from a vocational standpoint. A Department of Agriculture must be organized with at least two years of school instruction in the subject provided. The teacher of agriculture must be employed for at least twelve months of the year with the provision of a four weeks vacation at a time when the supervision of the work will best admit it. The school instruction in agriculture must occupy at least ninety minutes per day for five days per week for each class in the subject. In addition to this each pupil must carry on outside of school a six months supervised home project in agriculture.

3. The teacher of agriculture as has been stated must be technically and professionally prepared for his work. He must have had at least two years farm experience before he can qualify. He must supervise rather closely the farm project work referred to above. When a teacher of agriculture gives his whole time to the subject including the six months supervised farm practice, fifty percent of the salary paid to him by the local board may be reimbursed from the federal fund.

4. The pupils enrolling in the agricultural department of the high school must agree to carry on under the supervision of the teacher of agriculture a six months project of sufficient scope and importance to be worth at least from one-fourth to one-half unit credit, to require at least ten hours per week, more or less skilled labor, having sufficient economic returns to appeal to the interest of the pupil, and involving full record and accounting systems in bringing to completion.

It is evident that agricultural education under this law is well started in the direction of an efficient and satisfactory course, and school instruction is closely related both to farm practice and correlated sciences. The personal supervision of a trained teacher, in the presence of real farm material, in natural setting, it seems to me, provides ideal teaching situations. After six months experience operating under the Smith-Hughes law with thirty-five

teachers in the work and over four hundred boys in the courses, I am convinced that so far as agricultural education is concerned, Illinois has taken rapid steps forward in the training of young men in vocational agriculture in the secondary schools.

Mr. E. A. Wreidt's Paper

Funds Received and Disbursed

For the past year, ending June 30, 1918, Illinois received a total of $93,772.25 as its allotment under the appropriations made by the Smith-Hughes Federal Law on Vocational Education.

This allotment covers three funds: one for industrial and home economics education, one for agricultural education, and one for the training of teachers in agricultural subjects, home economics subjects, and industrial subjects.

The fund for industrial and home economics education amounted to $41,105.92. Of this amount, the State Board used $9,977.52 to pay one-half of the salaries of teachers of industrial and home economics classes in seven school districts in the State. The unexpended balance in this fund amounting to $31,128.40, returns to the United States Treasury.

Of the total allotment to Illinois, $93,772.25, the State Board was able to use $26,476.16, leaving a total unexpended balance of $67,296.09, which returns to the United States Treasury.

The relatively small amounts distributed by the State Board for the past year are explained by the fact that active promotional work could not be begun before March, 1918. By this time more than half of the school year had passed and local school authorities found it difficult, and in many cases impossible, to adjust school programs to meet the requirements of the State plans. The courses which the State Board has approved for reimbursement for the past year are therefore in nearly all cases courses established with no thought of meeting the State requirements. They are courses which have been in operation a long time, in many cases, and which have been found to measure up to the requirements of the State plans.

Schools and Classes Reimbursed

In the field of industrial education reimbursement was granted last year to one full-time or all day trade school, enrollment 16; nine part-time trade extension classes for apprentices in skilled trades, enrollment 512; two part-time general continuation classes for boys 14 to 16 years of age at work in less skilled occupations, enrollment 47; and twenty-six evening trade extension classes for persons engaged in the day time in skilled occupations, enrollment 646. The grand total enrollment in all industrial classes was 1,221.

Full-Time Schools

The full-time school is a machinist trade school established in Peoria about February 1st, partly as the result of an industrial survey made by the Peoria Association of Commerce, the public school authorities, and Bradley Polytechnic Institute, in cooperation with the United States Bureau of Education. One of the recommendations of this survey was that a machinist trade school should be established. The cooperation of the union of machinists in Peoria was secured in the organization of the school. The trade course is conducted in the manual training high school under the direction of the regular high school principal and superintendent of schools.

The course of study covers two years, thirty clock hours a week, one-half of the time being given to machine shop practice under the instruction of a man who has had three years of teaching experience in high school and twelve years of experience as a machinist.

The shop work is on a productive basis, the projects made including machines, machine parts, and tools for the use of the school. In addition to the machine shop practice the curriculum includes related trade subjects,

namely, trade drawing, trade mathematics, trade science, and non-vocational subjects, namely, English, civics, and industrial history.

The sixteen pupils enrolled are all graduates of the elementary school and were selected out of a group of thirty-two applicants. Four instructors are employed. The machine shop instructor devotes one-half of his time to this course, the remaining half being given to instruction of regular high school pupils. Each of the other three instructors gives 60 minutes each day to the machinist course, the remaining portion of his day being devoted to regular high school pupils. In granting reimbursement for one-half of the salaries of these teachers, the State Board has prorated the salaries on the basis of the proportionate amount of the school week which each instructor devotes to the machinist trade course.

Part-Time Trade Extension Classes

For six years Moline has been conducting a part-time trade extension class for apprentices in the machinist and pattern making trades. The class was originally organized under the auspices of the Tri-City Manufacturing Association. It is now conducted under the auspices of the Board of Education of Moline.

During the year 1917-18, ninety-two apprentices were enrolled. Each apprentice attends the part-time school one-half day a week for the school term, being paid by his employer for the time spent in school. The classes are limited to ten apprentices and meet in an elementary school building. Sessions are held each morning and afternoon except Wednesday and Friday afternoons when the instructor visits the factories having apprentices enrolled in the school. Eleven different factories were represented by apprentices in the school last year.

The subjects taught are trade drawing, blue-print reading, English, including civics and industrial studies, and shop mathematics, including arithmetical operations and the elementary portions of applied algebra, applied geometry and applied trigonometry.

One instructor does all the teaching and gives his entire time to this work. He is a graduate of the University of Illinois, has done some post-graduate work, and has had about five years of practical trade experience. The present instructor has been in charge of the school since its organization in 1912 and has done pioneer work in developing a course of study adapted to the needs of apprentices. The course has heretofore included 126 clock hours for each year, but the school authorities were glad to lengthen the course by eighteen hours in order to meet the minimum of 144 hours per year required in the State plan.

Since March 4, 1918, the Rockford Board of Education has been conducting three types of part-time classes: type one is for boys at work between the ages of 14 and 16 who attend the part-time school eight hours each day for two weeks and return to work for the following period of two weeks; type two is for boys at work between 14 and 16 years of age who attend school a half day every day and return to work for the other half each day; type three is for boys over 16 years of age at work in the machinist trade, in drafting, and in electrical work. Types one and two are general continuation part-time classes; type three is a trade extension part-time class. In all three types of classes the instruction is to a large extent individual.

The trade extension part-time class, type three, was formerly conducted under private auspices but was taken over by the Board of Education on March 4, 1918. About 60 pupils were enrolled in this class last year. The subjects in the course of study are trade drawing, trade mathematics, English, civics, history, and discussion of the tools, machines, processes, and materials, in machinist and electrical work.

Four instructors give their entire time to teaching in the trade extension course and in the two general continuation courses. All of these instructors

have had at least two years of college training and considerable practical experience. One is a college graduate and another is a graduate of an engineering school.

Chicago during the past year conducted seven part-time trade extension classes; one for apprentices in electrical work, one for machinist apprentices, one for carpenter apprentices, one for sheet metal apprentices, one for jeweler apprentices, one for baker apprentices, and one for plumber and gas-fitter apprentices. These seven courses were conducted in three of the regular high schools in Chicago. One of the courses, for carpenter apprentices, has been in operation since 1903. Other courses have been in operation a number of years.

All the courses are conducted by the Board of Education of Chicago and in most cases agreements are made between associations of employers and employees requiring the apprentices to attend. With a few exceptions there is no deduction from the wages of the apprentices for the time spent at school.

Apprentices attend school one or two half days a week except in the case of the carpenter apprentice school which is in session six hours a day, five days a week for twelve weeks during January, February, and March, which is the dull season in the carpenter trade. This carpenter apprentice school, although it is a full-time all day school for the twelve weeks in which it is in session, is nevertheless classified under the Smith-Hughes law as a part-time school for the reason that the apprentices give a part of their working year to school attendance.

The course of study in these part-time trade extension courses includes, for the jeweler apprentices for example, instruction in practical trade processes only; for baker apprentices, instruction in practical trade processes and in related trade subjects such as chemistry for bakers; for the machinist apprentices, related trade subjects such as trade drawing and trade mathematics, and non-vocational subjects; for the carpenter apprentices, shop work in carpentry, related trade subjects such as trade drawing and trade mathematics, and non-vocational subjects such as English and history.

Teachers experienced in the trade are in charge of all the instruction in practical trade subjects. For the related trade subjects, such as shop mathematics and shop drawing, the instructors have either had extensive experience in the trade or have had extensive training in technical subjects and have developed the ability to relate the instruction to trade needs.

Part-Time General Continuation Classes

Only two part-time general continuation classes received reimbursement from the State Board in the past year. These two classes were conducted by the Board of Education of Rockford. As already explained they were started March 4, 1918, and are intended for boys between the ages of 14 and 16 who have left school for work on work permits. The boys in this school are organized into two types of classes: first, a group which attends school on full time for two weeks and returns to work for the following two weeks on full time; second, a group which attends school one-half day each day and returns to work for the remaining half day each day.

In this general continuation school instruction is given in the following subjects: mechanical drawing, applied mathematics, civics, English, and vocational guidance. Vocational guidance here includes a discussion of the opportunities, advantages, disadvantages, and qualifications required for employment in machine, electrical, wood working, automobile, and other trades and industries. It also includes visits to factories and some shop work in the school shops.

Evening Trade Extension Classes

Chicago is the only city to receive reimbursement during the past year for evening trade extension courses, twenty-six classes receiving aid the past year. The courses included three classes in electrical construction, one for machinist apprentices of a locomotive repair shop, eleven in general machine shop practice,

two in blacksmithing and tool making, two in trade drawing, one in machine design, two in baking, and one in foundry. These twenty-six classes were conducted in five different school buildings.

In all cases the students enrolled were engaged in the day time in work to which the instruction in the evening classes was strictly supplementary. The instructor in all cases has had extensive trade experience and extensive teaching experience.

Prospects for the Current Year

Full-Time Schools

The machinist trade school in Peoria is being continued this year.

Rockford has started a machinist trade school with the opening of the current school year.

Chicago is considering several full-time or all day trade courses for the present year: courses in mechanical drafting and in the electrical and machinist trades, for boys, in the dressmaking and glovemaking trades for girls, and a course in architectural drafting in the fourth year of the high school curriculum.

Rock Island is considering a one-year full-time course in mechanical drafting.

Geneseo is considering the establishment of a trade school of the general industrial type to prepare students to engage in general wood-working in the community, in occupations which require skill in closely related wood-working trades such as carpentry, cabinet making, and mill-work. Such a trade school is called a general industrial school to distinguish it from what is called a "unit-trade school." The unit-trade school is appropriate for larger industrial centers where the trades are highly specialized. It provides for a given group of pupils instruction in one trade only. The general industrial school, on the other hand, furnishes to a group of pupils instruction in two or more closely related trades. Such a school is suitable in smaller industrial centers where combination workers are needed with a knowledge of two or more closely related trades.

Part-time Classes

In Moline the trade extension part-time school is being continued.

In Rockford the trade extension and the general continuation part-time classes for boys will be continued. Rockford is also considering the establishment of general continuation classes for girls between the ages of fourteen and sixteen, so that the girls may have the same opportunities as the boys in this age group now have.

LaSalle has started a trade extension part-time course for machinist apprentices.

Rock Island has in the past conducted a part-time trade extension course for carpenter apprentices, the classes meeting in January, February and March. The Supervisor was unable to visit this school last year before it closed for the year, and is unable to say positively that the school will be resumed this year. Rock Island is also considering the establishment of part-time classes in salesman ship for girls employed in department stores.

Alton, at the time of the Supervisor's last visit, was definitely considering the establishment of general continuation part-time classes for boys and girls between the ages of fourteen and sixteen.

All of the seven trade extension part-time classes in operation in Chicago last year will very likely be continued this year. In addition, Chicago has started what may be called a trade preparatory part-time class for workers on automatic screw machines. This class was started as a war emergency class to meet the needs of Chicago factories having war contracts. According to the arrangements made for these classes, men who had had little or no previous experience in the operation of automatic screw machines, were to be hired by the employers, placed on the company payroll, and were to be sent at once to the school to

receive training. The men were to spend in school eight hours each day, five and one-half days a week, for several weeks, all of this time under pay from the employers. At the end of their period of school training they were to begin regular employment in the factory. Notwithstanding the fact that in this school the men give their entire time to school work, the school is classified as a part-time school under a recent ruling of the Federal Board for Vocational Education, on the ground that the men are definitely scheduled for employment before beginning the school work, and hence are giving a part of their working year to school attendance.

During the past few years Chicago has been conducting a number of part-time schools giving instruction in commercial subjects, such as bookkeeping, stenography and other office work. Before July 1, 1918, the Federal Board had ruled that federal money could not be used for instruction in commercial subjects, but since that date it has modified its position and now rules that instruction in commercial subjects may be given in part-time classes. This ruling of the Federal Board very greatly extends the opportunities for part-time instruction in the State, especially in the larger cities where there is great need and opportunity for part-time instruction in salesmanship and other commercial subjects.

Chicago has been conducting four of such part-time commercial schools for persons employed in the offices of the packing companies in the stock yards district; also one large part-time commercial school in the down-town office district of the city for persons employed in offices and for persons seeking office employment.

Springfield has during the past year been conducting part-time classes giving instruction in commercial subjects to women and has recently established part-time general continuation classes for boys and girls between the ages of fourteen and sixteen years, who left school before completing the eighth grade. These general continuation classes meet Saturday mornings from 8:00 to 12:30 in the high school building and receive instruction in English, arithmetic, citizenship, hygiene and elementary science, shop work for boys, and cooking and sewing for girls. Where employers desire it, arrangements have been made for pupils in the regular day schools to work Saturday mornings in the shops and stores in the places left vacant by the continuation school pupils.

The type of organization established in Springfield for the general continuation classes may be suggestive to others considering the formation of such classes. The problem of securing teachers is simplified by the fact that the classes meet Saturday morning when the teachers are free from their regular teaching work. All the shop and laboratory equipment of the high school is also available on Saturday morning. The pressure upon employers caused by employees attending continuation school on working time may also be relieved by the fact that on Saturday mornings the regular day school pupils are free to take the places of such employees.

The great need of the hour in the field of industrial education is the establishment of part-time schools throughout the State. When local school authorities are first approached regarding industrial courses, they are as a rule most interested in full-time or all day schools. On mature consideration, however, they are readily convinced that there is a relatively limited need for the highly specialized all day trade school meeting the requirements of the Smith-Hughes Law. Such full-time schools are needed mainly in the larger industrial centers.

On the other hand, the need for part-time schools is widespread. This is especially true for part-time classes of the general continuation type for persons 14 to 16 years of age who are in unskilled or semi-skilled occupations and who need a continuation of their general education in subjects which are designed to promote good citizenship and in subjects which are related as closely as possible to their daily work, or to the occupation which they desire to follow in the future. Such general continuation schools should be established in practically every school district in the State. Some pupils must of necessity leave

school at an early age. To such pupils an additional oppo. unity and incentive to continue their education is offered by part-time continuation classes giving practical instruction related to their daily work. A considerable number of school districts are at present prevented from establishing such general continuation schools only by the fact that they lack sufficient local funds.

The interest in part-time continuation classes is spreading rapidly throughout the State. The Committee on Children in Industry, of the State Council of Defense, has a paid worker who has been visiting many of the cities in the State in an attempt to interest these cities in the establishing of part-time general continuation classes for boys and girls at work between 14 and 16 years of age. This Committee is also endeavoring to promote the establishment in these cities of a vocational guidance or an employment supervision bureau.

The Illinois Federation of Women's Clubs, through its committees on education throughout the state is also endeavoring to enlist the co-operation of employers and school authorities in the establishment of part-time continuation classes for boys and girls at work between 14 and 16 years of age.

Evening Classes

Although Chicago was the only city which received reimbursement for evening classes last year, such classes were in operation in some half dozen other cities in the State, but the classes were discontinued before the Supervisor had an opportunity to pay them a formal visit. There are many industrial communities in the State which should offer evening classes in trade extension subjects, especially in trade drawing.

Teacher Training Courses

An important part of a state program for industrial education is the early establishment of training courses to prepare teachers. For the practical subjects and for the related trade subjects in industrial schools and classes teachers are needed who have had considerable experience in the trades and who also know how to teach. The combination is not easily obtained. Persons who have had extensive practical experience in the trades have not always had much general education and only in rare cases have they had experience in teaching or preparation for teaching. On the other hand, many of the experienced teachers in the State lack the important qualification of extensive practical experience in the trades. Hence it is necessary in the early stage of a state program for industrial education to establish training courses to prepare teachers of the practical trade subjects and of the related trade subjects.

Two types of such teacher-training courses have already been started in Illinois. One was conducted at the University of Illinois in the summer session of 1918. To this course persons were admitted who had had practical experience in wood working trades and who also had some teaching experience in elementary or high school. Two courses or subjects were offered: one course on the principles of wood working, including practice in university shops; and a course on "industrial education," a lecture course dealing with the aims, objectives and methods of industrial education and the operation of the Federal Law on vocational education.

The other teacher-training course thus far established is an evening course conducted in Chicago by the University of Illinois. To this course are admitted men who have had at least two years of journeyman experience in the machinist trade and whose general education is at least equivalent to that of the elementary school. The classes meet two hours an evening, three evenings a week, twenty weeks a year for two years, a total of 240 clock hours. Instruction is given in trade drawing, trade mathematics, trade analysis, trade science, industrial geography, industrial history and citizenship, sanitation and safety, industrial education, English, and supplementary shop work. Observation and practice teaching are required, the regular evening trade extension classes in the Chicago schools being utilized for this purpose by courtesy of the

Board of Education of Chicago. Additional evening teacher-training courses for shop teachers will probably be established in the near future for other trades and in other industrial centers of the State.

Plans are also under consideration for training courses to prepare teachers of science, and for training courses to prepare teachers of general continuation related subjects such as trade drawing, trade mathematics, and trade subjects or general education subjects in part-time and full-time schools. Although the State plans for these training courses are not yet matured, the requirements for graduation must include the completion of four years of high school work and at least two years of college work in order to meet the standards fixed by the State Board for the qualifications of teachers of related and general education subjects. Observation and practice teaching will be an essential part of all teacher-training courses.

Hon. Francis G. Blair, Chief Executive Officer, Illinois State Board of Vocational Education, next addressed the section on "The Outlook for Vocational Education in Illinois." Mr. Blair spoke in his usual forceful and happy manner and his address was well received.

Following are the Minutes of the Business Session of the Association as reported by the Secretary.

Urbana, Illinois, November 22, 1918.

The fifth annual business meeting of the Illinois High School Principals' Association was held in the Trinity Methodist Church of Urbana at 1:00 o'clock P. M.

The minutes of the preceding meeting were read and approved.

The following Nominating Committee was appointed:

Principal R. W. Pringle, Normal, Chairman;

Principal C. W. Whitten, DeKalb;

Principal H. A. Dean, Crystal Lake.

Principal L. W. Smith, President of the Association, made a statement of the aims of the Association and gave an outline of the work of the Executive Committee.

The Association then proceeded to a discussion of the constitution as it had been prepared by the Executive Committee. After minor amendments the constitution was adopted in the following form (as appended below).

Suggestions for legislative action were then invited by President L. W. Smith.

Moved by Principal C. P. Briggs that the Legislative Committee be instructed to formulate and support anti-fraternity legislation. Seconded and carried.

Remarks were made by Principal W. N. Brown, advocating the preparation of and the presentation to the legislature of a practical and workable vocational bill.

Principal L. W. Hanna, after preliminary remarks, moved the adoption of the following resolution: "Resolved, that this organization support the study of the problem of high school costs as to dis-

tribution among the various kinds of service; as administrative and instructional cost; upkeep, etc.; and that a printed or mimeographed report of the study be made. Seconded and carried.

The Nominating Committee made the following report:

President, Principal W. L. Goble.

Vice-President, Principal Silas Echols.

Sec'y-Treasurer, Principal W. D. Waldrip.

3-year Committeeman, Principal R. G. Beals.

2-year Committeeman, Principal W. R. Spurrier.

The report was adopted.

The meeting was then adjourned.

Constitution

Article I—Name

This organization shall be known as the Illinois High School Principals' Association.

Article II—Purpose

The purpose of this organization shall be to promote secondary education in the State of Illinois. To that end it will exert every means in its power to stimulate the professional attitude among its members, by a conscientious scientific study of administrative problems and by the development of a fraternal and cooperative spirit among its members. The Association will seek to elevate high school work and to organize it in its relations to elementary education on the one hand and to higher education on the other in such a manner that the whole educative process will be a continuous and well integrated whole. This will include the encouragement of suitable legislation for this purpose.

Article III—Membership

Any person, who is principal of a high school, superintendent of schools, or who is in any other way charged with the executive administration of a secondary school, or who conducts courses in the scientific study of education in a university or other higher institution of learning in this State, may become a member by paying the annual dues. The annual dues shall be two dollars, of which one dollar shall be the membership fee of the members of this Association in the National Association of High School Principals. All memberships shall expire on August 31st of each year.

Article IV—Officers

Section 1. The officers shall be a President, a Vice-President and a Secretary-Treasurer, who shall have the duties and powers usually pertaining to these officers.

Section 2. The officers together with two additional members elected by the Association for that purpose shall constitute the Executive Committee. Three members of the Executive Committee shall constitute a quorum for the transaction of the business of the Committee.

Section 3. The term of office of the officers and members of the Executive Committee shall be three years. At the annual meeting in the year 1918 the President and one member of the Executive Committee shall be elected for the full term of three years; the Vice-President and one member of the Executive Committee for a period of two years; and the Secretary-Treasurer shall be

elected for one year. At the expiration of these terms, all officers shall be elected for the full term.

Section 4. The Executive Committee, under the authority and supervision of the Association, shall administer the work of the Association. It shall formulate its programs and guide the work of its committees.

Section 5. In case of vacancy by resignation, removal from State, or due to any other cause, in any unexpired term, the President shall appoint a member to fill the vacancy until the next annual meeting, when the Association shall elect a member to fill the vacancy during the remainder of the term.

6. It shall be the duty of the President, early in each annual meeting, to appoint a Nominating Committee, which shall nominate officers and a member of the Executive Committee, when one is to be elected, for ensuing terms of office and to fill vacancies in unexpired terms.

Article V—Fiscal Year

The calendar year shall constitute the Association year and officers shall begin their terms on January 1.

Article VI—Quorum

Fifty members shall constitute a quorum for the transaction of business.

Article VII—Meetings

Section 1. The annual meeting shall occur at the University of Illinois at the time of and in connection with the Annual High School Conference.

Section 2. Special meetings may be called by the President upon ten days' notice by the President. Special meetings must be called by the Secretary-Treasurer on request of twenty-five schools, upon ten days' notice. Time, place and purpose of the special meeting must be clearly stated in the notices.

Article VIII—By-Laws

By-laws may be enacted covering procedure and policy of the Association, by a majority vote of those present.

Article IX—Amendments

All proposed amendments to the Constitution must be submitted in writing to the Secretary-Treasurer at least one month prior to the annual meeting, and he shall transmit them by mail to the members at least two weeks prior to the annual meeting. Any amendment shall become a part of the Constitution by a two-thirds vote of those present at any annual meeting.

GEORGE E. ANSPAUGH, *Secretary-Treasurer.*

2. AGRICULTURAL SECTION

Meeting called to order 9:30 by Chairman D. H. Wells of Litchfield. After announcements for the day were given, the minutes of last year were read and approved.

Mr. A. W. Nolan, State Supervisor of Agricultural Education, in a brief talk set forth the outstanding features of the Smith-Hughes law and the Illinois plan for vocational agriculture under this law for the year 1918-1919.

Address on Vocational Agriculture in the north central states given by John Linke, Regional Supervisor of Agricultural Education for the Federal Board of Vocational Education.

The rest of the forenoon session was given over to a symposium consisting of brief accounts of the boys' projects under supervision by the following teachers of agriculture in Smith-Hughes schools, approved by the Illinois Board for Vocational Education. Reports on the projects follow.

[The afternoon was given to the joint session of Science groups. See Part III.]

Vocational Agriculture in the East Central States

John Linke

It gives me great pleasure to meet the vocational agricultural teachers of Illinois and to tell them some things about the vocational work in the ten states over which I have supervision under the Smith-Hughes Act. There are a great many changes coming about in our ideas of education.

There are in reality two schools, the old and the new school. The old school is composed of men who believe that education exists for culture and that subjects which give the greatest mind training are the most valuable in the course of study, such subjects as Latin and Algebra were subjects that gave mental training and consequently were cultural subjects and were of great value for this reason. The new school is composed of men who believe that the greatest culture comes from subjects which are more nearly related to the boy's life work. That is the subjects which are the most practical in the way of being used in every day life by the boy, after he gets out of school. They argue that the study which enlists the interest of the boy, together with preparing him for some phase of life is to the greatest value and also gives the greatest culture, that is there is just as much culture in agriculture when properly organized and taught as in Algebra or Latin, plus vocational training. Therefore, the vocational studies are of greater importance because they give both culture and vocational training.

The colleges seem to have dominated the courses of study in the high schools in the past and the course of study seems to have existed merely as a preparation of the pupils for college entrance, rather than as a preparation for their life work. When we remember that less than 10 per cent of our boys, who graduate out of the high school, ever go to college, then we must arrange a course of study that will also meet the needs of the other 90 per cent, or those who never go to college. To do this we must look forward to training of boys for the vocations of life. We must also look forward to the time when our high schools will come in closer touch with community interests and serve the people of the community more than they have in the past. This will make our high schools more democratic institutions and of greater service to the communities in which they exist.

Several years ago, some of the states passed vocational education laws authorizing the establishment of vocational schools and departments in their high schools. This has worked out so well in these states that when the Smith-Hughes bill came before Congress it was unanimously passed and became a law, which goes to show that the United States was ready to take up the work that several of the states had already demonstrated a good thing for their educational systems.

When this became a law and before the states could participate in the benefits of this law they had to submit a plan to be approved by the Federal Board and upon the approval of the Federal Board became a contract between the Board and the state for the carrying out of the work under this Act in the several states. Every state in the Union accepted the provision of the Smith-Hughes law and has made efforts to establish the work within its own borders. The plan of the Federal Board is to give the state as much freedom

as possible in carrying out this work, yet holding the standards as high as is necessary to successful work under the Smith-Hughes Act.

After the passage of this bill the United States was divided into five sections, about ten states in each section. Over these were placed two men, one to have charge of the trades and industries and one to have charge of agricultural education. Last year there were in my territory more than 150 schools of vocational agriculture, which met the requirements of the law, with more than 35,000 pupils. At the beginning of the war many of the teachers were drafted. This year we have been handicapped in the advancement of the work because of the lack of teachers, but next year, upon the return of these teachers, we hope to see great progress in the establishment of vocational schools in this section.

If any particular community is interested in the establishment of a vocational department in its high school, the method of procedure is first to apply to the State Board for Vocational Education or its executive, the State Superintendent of Public Instruction, who will send the state supervisor to visit the community, to inspect the work and talk over the methods of procedure with the school authorities. If they can meet the provisions of the law then he will recommend to the State Board that they be given Federal aid for the work that they are doing in this particular school. Some of the requirements of the law to be met are:

1st. That each dollar of Federal money spent for the salaries of teachers must be matched by either a dollar of state or local money or both.

2nd. That the pupils who enter the school must agree to carry on six months practical work in connection with their school work. This is the strong point I think in the Smith-Hughes Act, as it requires the boy to put into practice things he has learned in the school room.

3rd. The work must be less than college grade and designed to meet the needs of pupils over fourteen years of age who are either farming or preparing to become farmers. The teacher should observe this particular passage in the law that the course must be less than college grade. Too many of the teachers going out to teach in the vocational schools are teaching much as they were taught in college, often using the same texts and laboratory practicums.

One of the chief things that a teacher should do first is to see that the work is arranged to meet the needs of persons of less than college grade and all of the work should be so arranged, even the laboratory work should be simple and practical and applicable to the needs of persons who are going to farm.

In order for a teacher to succeed in his work he ought first to have a thorough preparation for this kind of work, that is, he should take advantage of the teacher training given in institutions in the state designed to meet the requirements of the law in the training of teachers. The plans for each of the states require a college graduate to teach in the vocational school, so the first thing the teacher should do would be to get a degree from the Agricultural College designated by the State Board for the training of teachers.

After a teacher is thoroughly prepared for this kind of work he ought to get on the job at least a month before school begins, in order to get his work thoroughly organized. He should carefully organize his work for the entire year so that he will know just what he wishes to accomplish, that is, there are two ways of preparing his work; first, he should outline his work for the entire year and then make careful daily preparation. After he has organized his work for the year he can secure what laboratory and reference material he will need. It is well enough that he have this in advance. Then in order to waste no time in the class room he should carefully work out the details of his daily program and in that way he will be able to know just what he wishes to accomplish. The teachers who do this seem to secure the best results.

To illustrate the value of the daily preparation, suppose that the teacher intends to take a class to a nearby farm for the study of dairy cattle. If thor-

ough preparation for this work is not made it may prove a failure because of the lack of co-operation on the part of the farmer. He will not have things in readiness for this work and the pupils may not be prepared to keep notes of the work accomplished on this trip. The teacher should see the farmer in advance and make arrangements with him to bring the class to his place for the study of dairy cattle and get the consent of this farmer and his co-operation in making the work a success. The teacher should also know when he starts out, just what he wishes to accomplish by this trip. He should have gone to the farm and made a study of the cattle in advance and then when he brings the class he will know just what he wishes to teach them.

There are three kinds of work to be considered in the teaching of agriculture:

1st. The class room work.
2nd. The laboratory work.
3rd. The Home Project work.

In order to carry these out successfully the teacher should have the right viewpoint and that is his aim should be to make farmers rather than to teach agriculture in an academic way. I think he should organize his work on what we call the Home Project basis, that is the boy should have a practical Home Project which he is carrying out and the class and laboratory work is used to give him as much information as possible on the practical work he is doing at home. If the teacher will keep this in mind and make a thorough preparation for this kind of work, I think great headway will be made toward success in this line.

The class, laboratory and practical work should be closely related, so that the class and laboratory work will not only help in the practical work, but that the practical work will also reinforce the class and laboratory work of the pupil. Let me illustrate: Suppose the boy has planned to grow corn for his Home Project; then he should begin early in the year by selecting his seed corn from the field. His class room work will be instruction on how to select the seed corn from the stalk, just what kind of stalk he should select from, the height of the ear on the stalk, how it should hang, etc. The laboratory work will be for the teacher to take the class into the field and actually give them practice in selecting seed corn in accordance with the instructions. Then the Home Project work will be for the boy to go into the home field and select enough corn to plant his own corn the next spring. The next step in the study of corn would be the curing of corn. The class instruction would be methods of curing and devices used in the curing, etc. The laboratory work would be for the pupils to construct these different devices and cure the corn which they selected from the field. The Home Project work would be for the boy to cure his own corn in accordance with the instructions, getting it ready for his practical work. Next would be the selection of the best ears for planting. This will bring in the study of the score card in the class work. The teacher should give the pupils a thorough knowledge of the score card in judging corn. The laboratory work would be the actual scoring and judging in accordance with the instructions given on the score card. The Home Project work would be for the boy to use the knowledge he has gained in the judging of corn in selecting the best seed ears from those gathered in his home field, in preparation for planting his corn next season.

This method of instruction can be carried through the entire year, step by step until the boy has thorough instruction along the lines of the crop which he wishes to grow. This is the best method it seems to me and this same method can be applied to every line of work found in the course of study for the teaching of agriculture. When a teacher carries out the work along these lines, laying special emphasis on the practical work it seems to me that great results will be obtained in the community in which he works.

One thing school authorities should do to make the work most effective in their schools is not to allow any person to take the course, but those who are

already farming or preparing to farm. When the class contains persons who are not interested in the work it always destroys the interest of those who are preparing to become farmers, but where the class is composed of bona fide vocational students, the interest is intense and great good is gotten out of the course. With the close of the war and the return of many agricultural teachers we are looking forward to next year's work with great anticipation. We are looking forward to a great increase in the number of schools in every state in the Union. In the next two or three years we will see nearly every rural high school in the whole country with a vocational agricultural department that will be used in the preparation of boys to become farmers and it ought to have practical results in not only making better farmers but in making the business of farming one of the chief interests of the people.

Reports on Projects by Smith-Hughes Teachers (Stenographic Reports)

Mr. H. F. Crosby, Paris

One boy that I succeeded in interesting in the work, invested in four pure bred Duroc-Jersey hogs. He began the first of July. He fed them according to proper standards we determined together. He exhibited the hogs at the county fair and they took first prize. There were something like twelve entries, but his were so much the best that there was no comparison. The boy is strong for Duroc-Jerseys from now on.

Another boy became interested in sheep. He is now feeding four Shropshire lambs for the International, and he will probably give somebody the run for the money. He has four sheep that he picked out himself out of something like sixty sheep running in a barnyard. When he came to put these on the scales the four weighed 360 pounds, exactly 90 pounds for each one of them. When we looked over the rest of the flock, it was apparent that he had made the best choice. He is interesting other boys and will hardly give them a chance in class room work, because he has to know all about sheep and wants to tell it. Every boy is interested.

Mr. Levitt Kimmel, Chrisman

A year ago we had a freshman who was a problem all the year until he left to go out on the farm the first of May. He was not interested in the work and could not settle down. Apparently he was not ready for high school. The first semester he made no credit whatever, and the second he managed to get credit in Agriculture at 80 and in English at 75. Beginning April 1, we started our work on Smith-Hughes projects. He immediately became very much interested in that and I succeeded in getting him to take a project of twenty acres of corn. I had heard that he would probably not go on in school after the one year. He and his father took great interest in the work. All summer he attended to business on that twenty acres of corn, and kept his records in good shape. He came back to school this fall and was a new boy. He is no longer the problem that he was. At the first report at the end of six weeks, Morris, instead of all failures, had three 80's and one 90. He is planning to do a good substantial project as soon as possible. His father has become very much interested and is now hoping that his son will take over and reorganize the farm sometime. The boy is going through high school and perhaps through the university, and then return to take charge of the farm.

Another boy took twenty acres of land (black silt loam) and paid rent to his father. He rented a team and furnished the labor. He took that project all the way through as a business proposition of which he is to reap the profit himself. He has had one of the best lots of corn in the community. His father is an excellent farmer and Frank could get a good deal of help that way. In the process he also mastered a good deal of the science of cultivation. The

husking is not entirely finished as yet, but his plot is yielding better than any corn in the neighborhood.

Mr. C. C. Turner, Gurnee

My best project was constructing a silo. The boy lives on an 80-acre dairy farm. Heretofore they had always shocked the corn and made their life miserable in snowy weather in hauling the shocked corn. There was a close relationship between the father and son. They always went to the field together and worked together. I thought it was a mistake to separate them and make the boy compete with his father; so I decided to let them work together on this project. They had thought of putting up a silo for several years. The corn which they raised was too late a variety for that region and never would mature in that climate. I went over the advantages and disadvantages of all types of silos and let them use their judgment. They decided on the redwood wooden silo because they could make it all themselves on rainy days. They got the material about the first of August. They made the bands inside on rainy days. It had to be complete by September 1. The boy kept records of the corn, methods of cultivation, and pointed out the bad points of this variety of corn because it would not mature soon enough. He kept records of the cost of filling the silo, but it was begun too late to get all the cost of planting, etc. This winter he is to take up the problem of home dairy and the cost of home dairy cattle. Thus the project runs through the whole year.

Mr. T. W. Clarida, Centralia

One of the boys in my class was nineteen years old before he had started to high school, for he had been out three or four years. He was considering very seriously whether he should attend a business college. We went over the matter with him, outlining the work that he would get in the high school. If he had to have some business training, we told him that he could take some typewriting, etc. He decided that he would go just one year. He has now come two years and will probably finish. Last spring he decided to take a project of tomato growing on one-fourth acre. This was carried along with his regular farm work. He started by selecting his seed from a reliable seed house, started the seed in the winter, put them in a hot bed and transplanted them later. He did most of the work after the regular work of the day. He cleared a little under $70. He is figuring on carrying on a large project in corn growing. He has his seed selected and will soon test it. He intends to put out about thirty-five acres.

Mr. J. R. Gilkey, Newman

My best project is on 30 acres of corn. The land was plowed late in the year, was disked early in the season and not plowed until May. One part of the field was disked after every rain. The third part was disked early in the spring and then just before plowing. There was a good stand of corn in spite of the dry weather where the land had been disked. There was about two feet difference in the height of the corn; the corn matured much more quickly and much better on the part where the disking was more thorough and complete. The boy rented the farm from his father and did all the work. He did the selecting of the corn, etc., before he had started the project. The project promises to turn out very profitably for the boy.

Mr. Perry Johnson, Leland, (Junior high school)

The following is a summary of reports of Animal Husbandry projects carried on by the pupils without supervision during the summer and shows what can be done when the pupils have a real interest in the work. This year the work is supervised according to the Smith-Hughes law, twenty-one boys in the class doing work in plant industry, and the rest in animal husbandry.

Freshmen: Project	Net Profit
1. Pigs and chickens (White Plymouth Rocks)	$50.00 (estimated.)
2. Garden work. This is a small village where people do not have gardens but buy their vegetables. He kept a succession of things going through the summer. Had five lots.	$75.00 besides garden products used at home. Bought 10 War S. C.
3. Pig given to him by his father.	$60.00 (sold for) Bought 12 W. S. S.
4. Poultry. Kept very accurate accounts.	$46.18.
5. Two pigs.	$75.00 (Father retained some of the money).
6. Did not work on an actual farm project; worked in garage on farm tractors during the summer.	$65.00
7. Potatoes. Chose a strip of pasture land and tended it.	$177.00 (Counting present market value; is holding them for higher price.)
8. Poultry.	$75.75.
9. Sheep. One lamb.	
10. Garden.	$64.00.
11. Sheep. Cares for entire flock of father's sheep of 200.	$80.00 (Commission.)
12. Potatoes.	$85.50.
Sophomores: (Some in Boys' Working Reserve)	
1. B. W. Reserve.	$25.00.
2. Potatoes.	$88.00
3. B. W. Reserve during summer.	$250.00 ($50.00 liberty bond, $165.00 on interest.)
4. Bees. 20 stands. Figured the honey on hand at 12c per lb. I intend to show him how to use extractor of honey and to go on with the work.	$136.00 (Sold and on hand.)
5. Poultry and sheep.	$26.00 (Sold wool from the lambs.)
6. Worked in garage on Ford tractors.	$125.72.
Totals:	
Freshmen .....$ 878.43	$245.00 W. S. S. $100.00 liberty bonds.
Sophomores 671.22	$142.00 W. S. S. $100.00 liberty bonds.
Amount of work in actual production..$1045.65	$384.00 W. S. S. $200 liberty bonds.

At this age the boys seem to realize the value of money. In keeping cost accounts one of the boys "cut out" smoking because it did not look right when written down in his accounts.

Mr. A. H. Lancaster, McNabb, (John Swaney school.)

As I was in summer school I did not organize project work until I went home in August. One man in the community was a German and I had been told that probably I could not get him to let his boy go into the work. One morning I went out to see him. The man did not say anything, but let me talk. Then he said, "Vell, I tink dat iss a goot idea," and asked the boy what he wanted

to do. The boy decided that he wanted to feed hogs, and the father wanted to sell him twenty-five. Finally he bought two out of a lot of fifty. He is feeding them in a lot next to his father's and is taking excellent care of them. They are now about ready for market. The father said, "Vat you tink about it. His hogs are better than mine. I tink Fred better feed the whole bunch next time." And it will probably end by Fred feeding the fifty. The father sold the boy these two hogs at market price and furnished the feed in back pay for summer work. The boy has three brothers, none of whom have gone to high school. In the past the teachers had great trouble in keeping him in school. This year he has not missed a day. They live on land which would probably give better results if the most of it were in pasture. I hope in the end we may be able to do this farm a great deal of good; also the boy and the father.

Mr. J. H. Baldwin, Jerseyville

I have in mind one boy who two years ago was a junior in high school, living five miles from town. He had decided he wanted to be a doctor, but was more suited to be a farmer than anything else. He was not in my classes, but a year ago he enrolled in agricultural work. Last summer he took up the project of raising five pure bred pigs, two Poland Chinas and three Chester Whites. He carried the project through the summer, exhibited at the State Fair and won some prizes. Yesterday I had a letter from him saying that he and his father had purchased eighty acres and he is taking charge of that. He is establishing a poultry flock and is breeding his sows this fall and working right into the real farming business. This I have considered my most successful project.

Mr. C. L. Albee, Oakwood High School (Fithian)

One of the men in the community feeds three carloads of hogs every year, using forage crops and corn. I got his son to buy two pigs, Poland Chinas, weighing 50 pounds, from his father. During the first period he fed them just as his father fed them, nothing but corn and running on grass pasture. The initial weight for the two was 100 pounds. The final weight at the end of the first period was 180 pounds. For the fifty day period there was a gain of 8 pounds per day for each hog at a cost of 16.6 per pound gain. During the second period, 53 days, he built a self-feeder and fed tankage. The initial weight was 180 pounds; gain 205 pounds, average gain 1.9 per day per hog at a cost of 9c per pound gain. The boy did not win anything at exhibitions, but he is learning much and made a considerable bit of money. This boy's father never fed tankage. With the use of corn and tankage, the boy's hogs outdistanced his father's and are put on the market quicker. His father now has an order for tankage. The boy now has registered pedigree and is going to sell for breeding stock.

This year I am teaching Animal Husbandry. Half of the boys do not know what the University of Illinois means. When you tell them about certain experiments carried on at the University, it is mere abstraction to them; it does not mean anything to them. But when I tell them that a certain boy has done so and so, they immediately become interested; the experiment becomes real to them. For the teaching of different types of animals, I try to teach them from the actual examples. I have seven types of hogs on hand now. I take the boys out and from the real animal teach them the characteristics of each type or breed. For the work with cattle I will take types from people who have them in the neighborhood around. The men around the country know that there are different types of hogs at the high school and they come and ask about them. The work is really creating an interest in the high school.

Mr. Linke: Final summary

We are planning to have a stock judging contest at the International between vocational schools of the different states as a means of understanding

the stock judging work and also the interstate stock raising. It is not a question of winning; it is a question of getting results with the boys out on the farm.

In one state there is a man who has been four or five years on the job. He gave to the boys in his community forty head of pure bred hogs. The men, too, are interested. They crowd around at the place as though it were a fall festival.

In another place a boy took a farm that was not much good, put stock on it and is now bringing it back to a paying basis. He is keeping records and doing it in a business-like way.

There was an Indiana boy who became interested in poultry from hearing the vocational teacher teach poultry, and decided to go into the poultry business. He purchased three settings of eggs and hatched three chicks. But he was not discouraged. He took these two pullets and purchased a fine pure bred cockerel and from those two pullets he saved 104 eggs. He set 98 and hatched 92 chicks, for which he was offered $1.50 apiece. It cost him just $14.03 to keep them; he made something like $125.00. He expects to go into the poultry business and to save enough money to send him through high school and through college.

A Wisconsin boy raised beans. He and his teacher went together and raised 80 acres of beans, gathering 1100 bushels, for which they were offered $10.50 per bushel.

These are just examples of what other states are doing. The whole work is vocational. We are counting on results.

At the close of the morning session Mr. C. E. Trout of Jerseyville and Mr. D. L. Reid, Traveling Instructor in Agricultural Education, Urbana, were added to the Executive Committee. The same officers were elected for the following year.

The session adjourned to meet in joint session with the Biological Section during the afternoon.

On Saturday morning an informal session of the teachers of agriculture in the vocational schools of Illinois was held, at which time the problems relating to the application of the Smith-Hughes law to the agricultural work of the schools were taken up. Very profitable and interesting discussions grew out of this meeting. The following committee was appointed to study the crediting system on home project work under the Smith-Hughes Law:

D. L. Reid, Urbana; Perry Johnson, Leland; W. F. Livingston, Robinson.

3. Biology Section

Minutes of Biology Section
Annual High School Conference, Urbana, Illinois

The section was called to order by Chairman J. L. Pricer at 9:15 A. M., who appointed the third member of the Executive Committee, Harold B. Shinn, to act as secretary. The attendance averaged about forty persons, and little active discussion of the papers and slight interest in them was manifest, probably because of the meager attendance and the inroads made by widespread illness and other conditions

contingent upon the war. A Nominating Committee was appointed, consisting of Dr. Van Cleave, Dr. Waggoner and Mr. Shinn. Its nomination of Dr. J. H. Whitten as Executive Member to succeed Mr. Pricer, retiring, was adopted with the recommendation that he be presiding officer at the next meeting.

Report of Committee on Equipment for Biology Laboratories, by Dr. H. D. Waggoner.

In making the report Mr. Waggoner admitted a substitution of his personal opinion regarding the number of microscopes advisable, i. e.: one per two pupils, as opposed to the opinion of a considerable number of teachers replying to a questionnaire who advised the installation of one, or possibly two microscopes, with a demonstration projection outfit. After a brief discussion of some points and of varying opinions, with slight modification the report was unanimously adopted.

The following papers were then presented:

The Study of Zoology as a Factor in Social and Economic Progress. Dr. J. H. Van Cleave, University of Illinois.

The Study of Botany as a Factor in Social and Economic Progress. Dr. J. H. Whitten, Chicago Normal College.

Report on the Re-actions of a High School Class to the Course in Botany Outlined by the Committee on Minimum Essentials. Superintendent Henry Porter, Delavan.

The meeting adjourned at 11:50 A. M.

HAROLD B. SHINN.

[The afternoon was given to the joint session of Science Groups. See Part III.]

Below are given the papers especially prepared for this Conference and read at the morning session of the Biology Section.

Final Report on the Minimum Equipment in Biological Apparatus for High Schools

By H. D. WAGGONER, Chairman of Committee

The preliminary report of the committee on minimum equipment in biology for high schools, published in the Proceedings of the High School Conference of November, 1917, brings out some important points in connection with the present condition of biology equipment in Illinois. The number of schools considered in the report is comparatively small, nevertheless it seems that the report is of sufficient importance to form the basis for final action upon the amount of equipment in biology that should be required of the accredited schools in this state. In considering the minimum equipment it is evident that the large high schools of over five hundred enrollment, need not be taken into account, for in general they have equipment far above what can be required of the small high school. The preliminary report indicates, also, that many of the high schools with an enrollment of from one hundred to five hundred are well provided for. In the larger schools the average cost of equipment in biology is two thousand four hundred forty-three dollars, and in the next lower group, those having from one hundred to five hundred students, the av-

erage cost is six hundred seventy-five dollars. If the money is invested wisely, the lower amount is sufficient to provide very good equipment for large classes in the average high school. The money invested in equipment in the larger schools is sufficient to provide much special apparatus of great value.

The problem of the minimum equipment is confined chiefly to the small high school of less than one hundred pupils. The importance of the problem becomes apparent when we consider "that more than one-half of the high school pupils in Illinois are enrolled in schools having less than one-hundred enrollment." In this class of schools, according to the preliminary report the average enrollment of the biology classes is between thirteen and fourteen students, and the average cost of biology equipment is two hundred sixty-five dollars. Moreover, in the seventeen schools of this class that were considered in the preliminary report, fifteen had less than the average value of equipment, and only two had more than the average.

If we assume that the small high school may have two hundred and fifty dollars for biology equipment, this amount must be spent wisely, if good work is to be done. The apparatus purchased should be general, rather than special, in nature, and the price must be as low as is consistent with good service. Equipment that is essential in the teaching of the more important phases of the various subjects must receive preference over that which may be useful in less important exercises. In view of these considerations, it is important that many of the physiological exercises requiring care in manipulation and more or less extensive apparatus, should be performed by the teacher as demonstrations. This not only reduces materially the required amount of apparatus and materials, but if the work is well done and discussed with care during the performance, the results are highly satisfactory from the standpoint of the work.

The apparatus listed below is largely of a general nature and much of it may be used in a number of exercises. The list of chemicals will vary with different teachers, depending upon the type of work that receives emphasis. The estimated cost of apparatus and materials is based upon a recent catalog from a well known company.

A large amount of materials and valuable equipment may be provided by the teacher and pupils without expense, such as glass plates, cans and boxes, old fruit jars, bottles, insect nets, screen cages, useful photographs, colored pictures, bulletins and various government and state reports, illustrative material from manufacturing concerns and numberless other things. On the other hand, there is much valuable equipment that cannot be considered as a part of the minimum equipment on account of the cost. Among these articles may be mentioned mounted birds and animals, various other costly museum specimens, large aquarium, green house, projection apparatus, electric oven, microtome, manakin, human skeleton, and various pieces of physiological apparatus.

Minimum equipment for high schools having biology classes of fourteen students:

1. A well lighted room provided with tables, chairs, water and some source of heat, such as gas or other adequate means. This equipment is not considered in the cost of biology equipment, as it is more properly a part of the general school furniture.

2. General apparatus. One-half gross of test tubes (6 in.), one dozen Petri dishes (4 in.), one-half dozen beakers (a nest), one-half dozen flasks (500cc.), two dozen watch glasses, one-half dozen fermentation tubes (6 in.), two funnels (4 in.), one chemical thermometer, two graduate cylinders (100cc.), one dozen medicine droppers, one mortar and pestle, two bell jars (12 in.), two aquarium jars (1 gal.), two pounds of assorted glass tubing, one gross of assorted corks, one dozen two-hole rubber stoppers (various sizes), two Bunsen or other burners, rubber tubing (15 ft.), one iron stand with clamps and rings, a few common tools, other desired articles to the value of ten dollars. Cost—$30.00.

3. Chemicals. Small quantities of the following: Iodine crystals, potassium iodide, copper sulphate, Rochelle's salts, potassium hydroxide, hydrochloric acid, potassium chlorate, manganese dioxide, litmus paper, chloroform, formalin, carbon disulphide, gelatin, agar, alcohol, and others desired. Cost—$15.00.

4. Sterilizing Apparatus. A small gas oven and a boiler suitable for sterilizing a flask of agar. A double boiler of a quart capacity is convenient. The inner boiler may be used as a cover for the outer vessel. Dealers sell small steam sterilizers that are convenient. Cost—$5.00.

5. Dissecting instruments, if used by the students, may be furnished by the members of the class.

6. A hand lens for each student. The members of the class may furnish these instruments.

7. A sufficient number of microscopes so that not more than two students need use an instrument at the same time. The ideal condition is to have a microscope for each student, but very good work may be done with two using an instrument at the same time. A skillful teacher, by alternating work with the hand lens and miscroscope, may use one microscope for four students in many exercises, but this is not advisable as a general practice.

Cost of seven microscopes, together with slides and cover glasses, $200.00.

Total cost of equipment listed above, $250.00.

8. Schools having the minimum equipment only ($250.00), or equipment valued at less than four hundred dollars, should set aside fifty dollars per year to add additional microscopes or other general apparatus, until the above named amount has been expended. Schools, where the financial situation permits, should be asked to provide additional apparatus, such as projection apparatus, lantern slides, anatomical models, or other pieces of the more expensive equipment.

The Study of Zoology as a Factor in Social and Economic Progress[1]

H. J. Van Cleave

One of the real functions of the high school should be the training of men and women to live. In the secondary schools a large percentage of our population find their training and mental equipment for life. A realization of this state of affairs is bringing about a complete reorganization of the high school curriculum. Fortunately most people have ceased to consider the primary function of the high school that of preparation for college. The modern trend of vocational education is a manifestation of the extreme point of view in this reorganization. No longer is any subject or group of subjects retained in the curriculum because of some hypothetical cultural value. Utilitarian values are constantly being more stressed. This, with the addition of new subjects to the curriculum, necessarily leads to a sort of competition between subjects. Values are constantly being weighed one against another with the result that many subjects are on their way toward elimination.

Few administrators stop to ask the question if the basis for rejection of any subject is the intrinsic value of the subject per se or rather a valuation which has become attached to the subject because of unfortunate conditions and circumstances entirely foreign to the subject but usually associated with it. I believe in the case of zoology in the high schools it can be shown that the materials selected for study and the methods of presentation are responsible for the decline, where such has existed, rather than any intrinsic weakness in the fundamental subject matter as a factor in directing human activity.

[1]Read before the Illinois Academy of Science in a Symposium on "The Need of a More General Knowledge of and Training in Science," February 23, 1918.

A decade or two ago men like Spencer, Huxley and Forbes convinced the educational world concerning the values of biology with the result that the study of biology was given a considerable impetus and prestige as a subject of instruction in the schools. At that time the number of subjects offered in the high school was relatively small. Competition between them for a place in the curriculum had scarcely begun. Biology secured entrance to the list of studies through the demonstration of the fact that the study of it contributed utilitarian, intellectual, esthetic or emotional, and moral values to the education of the student. With the increase in our scope of knowledge and the development of new sciences, there are now numerous courses offered in the secondary schools, all of which contribute to the intellectual, the esthetic and the moral or ethical phases of life. Consequently the final struggle for supremacy, or in some cases for existence, is to be fought out along the lines of relative contribution of direct practical value in human life.

The past generation has brought forth few educators in the field of zoology. Tremendous progress has been made in the addition of new facts to the bulk of zoological knowledge, but unfortunately no successful effort has been made by the leaders of this science to meet the popular demand for emphasis upon the practical values in teaching. Zoology as taught in the high schools is still chiefly that of the older morphological type in spite of the fact that the most recent advances in the science have frequently possessed more strictly practical sides. This failure to appreciate the necessity of incorporating the practical applications of zoology into the course of the secondary schools is due in large measure to the feeling that the value of zoology had been given full recognition upon its adoption following the efforts of the educators mentioned in the last paragraph. As a consequence of these combined factors no significant advance has been made toward the production of a text-book which would incorporate zoological materials of such importance to social progress as to demand general dissemination.

The prime object of a high school course is not the training of zoologists. In fact any attempt at correlation with later work in university or college course might interfere with accomplishing the very object of such a course, namely that of equipping the individual with a fund of knowledge concerning an attitude toward living organisms and his relations to them. That attempted correlation between high-school and college courses has in the past failed is evidenced by the general feeling among university teachers that students who have had work in high-school zoology are but little, if any better prepared for the intensive courses in the university than are those who have never had previous training.

Elementary work in a university course of zoology usually takes up the morphology of a series of types as a foundation upon which the study of the higher branches of the science may be built in later courses. Students coming from the secondary schools with a smattering of morphology, superficial, to be sure, but leaving them with the idea that they know the structure of animals, enter their university work with the handicap of self-complacency. At least in some instances this is due to the selection and preparation of the high-school teachers of zoology. Frequently persons are required to teach zoology when their preparation consists of nothing more than an elementary course in a university or a normal school. The lack of appreciation of the subject and of the problems involved in the teaching of students of high-school age permits such a teacher to attempt, with very few modifications, a repetition of the course which he had in college. The result is the cultivation of an abhorrence for zoology on the part of the students. Administrators are naturally inclined to attribute this result to weakness in the subject itself for the chances are that the teacher has been a success in teaching subjects for which he has been more thoroughly trained. On every hand there seems to be ample justification for a sharp differentiation between high school and university courses in zoology. Whatever line this differentiation may take it must be kept in mind

that there are facts and principles in the science of zoology an understanding of which is vital to the interests of the individual and of society. The dissemination of these must find a place in the program of our secondary schools.

Many teachers have laid especial emphasis upon the value of the study of science as a training in approaching the problems of life and reaching valid conclusions through a grounding in the application of the methods of science. The whole question of the transfer of training is much in dispute, but we are led to believe that not much is carried over directly except in case of rather closely related fields. For this reason the study of zoology offers opportunities unique among the sciences because of the possibilities of direct transfer of methods and content to the problems of man himself. The study of the structure, habits, functions, economic relations, reactions to stimuli, carried out in the field and laboratory upon various animals finds direct application of methods in the study of the human animal. The origin and meaning of sex, relations of individuals within a community, degeneracy as an adaptation to conditions of life, are all purely zoological problems capable of direct transfer in the study of the identical problems concerning the human animal. Not all these things can find full explanation in a high school course in zoology but the student may there be started to thinking along the right lines and to that extent his whole attitude toward life may be modified.

Let us look for a while at some of the problems of everyday life an approach to which can be best made through a properly organized course in zoology for high school pupils. As indicated in an earlier part of this paper practically no one questions the intellectual, the moral and the esthetic values of zoology as a subject of instruction. On the other hand, these values may well be assumed to be associated in varying degrees with all subjects of instruction. As far as these alone are concerned one subject probably serves as well as another for training students of high school age. There are, however, phases of zoological knowledge which hold peculiar values for the individual and for society. Were these to cease being matters of common knowledge among so-called educated peoples much of social and economic progress would be retarded. Conversely any agency tending toward the wider dissemination of such knowledge is distinctly opening the way to the solution of many of our economic and social problems.

No one questions the value to mankind of the knowledge of animals in their relations to disease, and the numerous problems associated with this phase of zoology. These have been cited so often that it seems hardly worth while to more than mention a few specific examples. A few generations ago a scourge like typhoid fever was looked upon as a problem which was to be solved by the members of the medical profession. Today it has, in addition, assumed a distinctly social significance. Little can be done in any community toward the prevention of a disease like typhoid without the education of all persons in the community in the reasons for exterminating the fly, based upon a study of the structure and habits of that animal. This in turn demands some knowledge of the life history of the fly, for effective measures toward extermination all presuppose such knowledge. Studies of this sort give to the individual more than the training in powers of observation and reasoning which frequently are considered the goal of zoological training. The pupil is not only given possession of facts which, put into practice, make of him a better citizen, but at the same time he is given a distinct advantage over those who are not possessed of this kind of zoological knowledge.

Few persons lead an existence which does not at some time or other bring them into contact with insect pests of household, crops, domestic animals, or of man himself. All effective means of combating and controlling such pests find their solution in the feeding habits and life history of the insects. Simple problems in development and in the structure of the mouth parts of the insects, which are correlated directly with the feeding habits, are studies which may be taken up to good advantage by the average student of high school age.

The enactment of fish and game laws, and laws for the protection of song birds all have as their aim, directly or indirectly, the conservation of the resources of our country. Persistent violators of these laws are, on the whole, the ignorant classes of society for whom the claims of personal liberty are stronger than the demands of social obligation. Bird protection laws would have much greater effect if more people had definite knowledge of the economic importance of our birds in holding insect pests of fruit, grains and other crops in check. Game laws would cease to be looked upon as infringements upon personal rights if greater numbers of our citizens were informed upon the breeding habits of our game animals and understood the severity of the struggle for existence among such animals as population becomes denser over the entire continent. State and federal officials would find not only support in enforcing existing laws but demands for more effective legislation if the reasons underlying such laws were more fully understood. This would unquestionably be the case if more general knowledge of such matters were given in our public schools.

The final success of the United States in constructing the Panama Canal has often been heralded as more of a biological than of an engineering accomplishment. Other nations, starting the task, failed not because of insufficient knowledge of the engineering problems involved but because of the lack of appreciation of the biological phases of the problems of sanitation and transmission of disease. Huge accomplishments of this kind, if they were numerous enough, would convince the most skeptical persons of the values in applied zoology, for the most of us are influenced by the spectacular. However, it may be asserted, without fear of contradiction, that extension to all persons of fundamental knowledge concerning animals as agencies in disease, with means of controlling such relations, would stand for more, economically, to the nation than any number of spectacular achievements such as the one just mentioned.

It is difficult, if not impossible, to place a correct monetary estimate upon human life, yet the most conservative of figures show that the economic loss to the people of the United States through what are termed preventable diseases is appalling. Many of these diseases do not involve animals other than man directly, so it may be claimed that a knowledge of zoology has no bearing in coping with them. But, on the other hand, the study of zoology in its relations to problems of sanitation and medicine furnishes a point of departure from which these topics may be reached in dealing with high school classes. The instance of hookworm in its bearing upon the economic problems of the South finds direct application at this point. A few years ago no one would have guessed that a small intestinal parasite could have produced such pronounced direct effects upon the economic status of a community as have been demonstrated in the case of the hookworm. Thousands of non-producing individuals throughout the South constitute an incipient reserve to our economic situation awaiting the application of zoological knowledge and establishment of sanitary conditions to transform them from physical and mental abnormalities into productive citizens. Outside agencies, such as commissions established for the extermination of such a pest, are effective, but their influence can not be equal to that of a general dissemination of knowledge concerning such animals through a well-organized course in zoology.

The savage goes to the medicine man for a charm and an incantation to keep off disease. To by far too large a percentage of the civilized world vaccination, administration of antitoxins, and similar preventive measures of the modern physician are regarded with a superstition differing from that of the savage only in degree. Our whole system of modern medicine is destined to be built more and more upon the foundation of the development of immunity and preventive medicine. It is not sufficient for the welfare of society that men and women in our colleges be trained in the general methods of the preparation of sera, antitoxins, vaccines and the like, for they constitute by far too small a percentage of our total population. The pity is that some knowledge

of these intensely interesting and vital relations of man to other animals in the prevention and control of disease can not be given to all classes of society. If future generations are to be prepared for the reception of the advances which are bound to come in the practice of preventive medicine it is essential that the general public be educated along these lines. Otherwise advance in this line would suffer the same fate as that accorded the practice of vaccination when it was first introduced into this country. History is replete with the records of social and economic revolutions which, once started, have failed because of the fact that the people had not been prepared to accept them. The logical place for the preparation of the general public for the advances in medicine which have been outlined above rests with our high schools and more specifically in connection with the courses in zoology.

Our public press in the past few years has conducted several campaigns against the quacks operating under the disguise of the medical profession. Occasionally we read sensational articles upon the apprehension of a few miscreants and the exposure of their methods of operation. The vast majority of the tribe remains unmolested and stands as a stigma in most communities. Most thinking people if asked for an explanation of why these conditions exist are free to confess that ignorance rests at the bottom of the whole system. It is not, however, the ignorance of illiteracy, for many of the victims are of what we might call the educated class. The ignorance that plays into the hands of such impostors is the ignorance of the human body which prudish persons frequently mistake for a type of chastity. Any person ignorant of the structure of the human body and its normal functions is just as much an obstacle in the path of social and economic advances of a community or nation as is the quack who preys upon such ignorance.

Turning now to some of the other phases of zoology which might be emphasized as of direct human value, the much discussed problems of heredity and those of sociology growing out of the operations of heredity can have little significance to the individual who is not acquainted with the fundamental concepts of the animal cell and its structure. Not that I claim an extensive study of the cell by students of this age is desirable or even possible, but the concept of the cell as the unit of bodily structure with at least a brief knowledge of the reproduction of the cell and the functions of the chromosomes as bearers of the determiners of hereditary qualities constitute a type of knowledge possession of which is essential to right thinking and to the abandoning of superstition regarding the genesis of life and the hereditary relation of parent and offspring.

A full realization of man's place in the universe can come only after a careful study of man's relations to other animals. In its entirety this is a problem too deep for the adolescent mind to grasp. However, it has been well said that primitive man *felt* rather than knew his relationship with other animals. In much the same way the child with his inherent interest in animals offers a foundation already prepared upon which to build a knowledge of those animals and a beginning of an understanding of his relations to other organic beings. Here is a field where the study of zoology alone can direct the primitive instincts of kinship between man and other forms of life toward the formulation of a rational concept of man's place in the universe.

Some practical knowledge of organic evolution must be behind every move in the progress of man. The facts of evolution may be recorded on the printed page but such facts standing alone have little true significance to the individual who has not had some first-hand knowledge of the structure of a graded series of animal forms. Further, in the study of the varieties of domesticated animals we find material which is able to impress the high school student with the idea of plasticity of animal form and the responses of the organism to the factors of evolution, even though they are here manipulated to great extent by man. It is but a step from this conclusion to a realization that these same laws of evolution are operative upon the human being. True, not all high school students

would grasp the significance of such a conclusion; not all would be able to take this final step; but the chances are that many would sooner or later be able to think the problem through for themselves and arrive at the conclusion that since man is subject to these same laws of change, man and his creations must participate in the endless march of time. If his progress is not upward it must be in the opposite direction, for the progressive change of evolution works equally in either direction. Such a conception is an absolute essential for a social or economic leader of men. For that reason it seems imperative that the background against which such concepts may be formed should be presented to as many of our future leaders as possible. The high school is none too early to begin training along such lines.

The Study of Botany as a Factor in Social and Economic Progress

J. H. Whitten

Recent developments in the field of botany have been so remarkable that botanists may justly feel proud of the knowledge, the great material prosperity, and the improved living conditions made available, by the contributions of their particular science.

The subdivisions of the mother science have become so vigorous and have penetrated so far into their respective fields that it is impossible for the members of any one group to be thoroughly cognizant of the achievements of the others. There is, however, a common ground on which all botanists may meet. There is likewise a stock of knowledge which must be not only the possession of botanists, but which must become the inheritance of the average citizen if botany is to fulfill the important mission allotted to it by nature. It is of the value of this knowledge and the importance of disseminating it that I shall speak.

Genetics as we know it at present in its application to plants is the youngest member of the botanical family. Since its rebirth less than two decades ago, it has held the spotlight of the scientific stage, and the workers have done much to deserve the attention they have received. Definite methods of procedure have been formulated by which cultivated plants may be modified almost to suit the fancy of the producer. By an intelligent manipulation of the normal reproductive processes of plants, new varieties may be produced, desirable characters accentuated and objectionable qualities removed. Yet genetics, mendelian inheritance, and eugenics are terms which have but little vital significance to the vast majority of college graduates, while to the great rank and file of citizens educated in the public school they are meaningless symbols. It is impossible to estimate the social and economic retardation resulting from this ignorance.

All botanists know that phytopathology has passed from the pioneer stage. Its importance to all phases of plant production is now so well established that colleges and universities everywhere have departments wholly devoted to this branch of botany. Conclusive evidence to justify the formation and maintenance of these new departments at public expense is to be found in the results obtained by the corps of active practitioners associated with every experiment station. But to what extent has the great body of knowledge accumulated by the experts become effective in the practice of the average man engaged in growing plants? My observations in this particular field have been somewhat extensive, ranging from the large commercial nurseries to the backwoods farmer. It has been found that the producer who treats his seed wheat for smut or his potatoes for scab, or who in any way modifies his practice to prevent the infection of his crops or to control the spread of contagious diseases is the very rare exception. The resultant losses are measured in hundreds of millions of dollars.

In bacteriology the contrast between the valuable knowledge extant and the portion functioning among the people is greater than in any other field of botany. And since many of the edicts of the bacteriologists are laws of health

nonconformance to them through ignorance is all the more disastrous. City ordinances calculated to protect public health are for the most part dead letter laws. No law can be enforced against an indifferent or antagonistic public opinion. Ignorance when not antagonistic is usually characterized by indifference. Instead of our public schools being places where specific and effective instruction is given on the nature and control of contagious diseases, they are more often places where contagious diseases are disseminated. It is truly pathetic to hear well meaning parents rejoice because Willie got the whooping-cough or Johnnie the mumps, measles, chickenpox, scarlet fever or what not, while he is young. Their theory is, and to our disgrace it is the prevailing theory among the masses, that people must have these diseases and therefore the sooner it is over with the better for all concerned.

It would be ludicrous if it were not so serious to witness the attempts to prevent infection when the information goes out from the health officials that the city water supply is contaminated. City folk are not the only nor even the worst offenders against the laws of sanitation so well known to the botanists. Down on the farm where everything is supposed to be so pure, fresh and healthful we more often find filth resulting from garbage undisposed of, open privies, and other sources, so that one is continuously exposed to typhoid, hookworm, and diarrhea through the well known channels of infection.

These conditions it seems to me are directly chargeable to the lack of an educational policy intended specifically to overcome them.

The agriculturists are doing more and succeeding better in disseminating the facts which we hope are destined to transform farming from an empirical practice to a scientific procedure.

As the result of state and national aid the agricultural experts have gone directly to the adult population and with much tact and persistency have demanded a hearing. No such inclusive campaign has ever before been attempted in American education. The results, in so far as the results of an educational campaign can be judged, have justified the effort and the expenditure of public money. There is, however, much remaining to be done. There are legions of farmers living contentedly in their sins. They plant their crops by the moon, operate on their stock according to the signs of the zodiac, and carry buckeyes to ward off disease. Many of these individuals have been in contact with the truth, but they passed the formative period of their lives and their habits have become fixed. They may even assent intellectually to the teachings of the experts, but they have not the power to adjust themselves to the new methods. Average yield of crops thruout the country is from one-half to one-third what it would be if the average farmer knew and applied the available knowledge on crop production. As propaganda the course which has been pursued by the agriculturists has produced wonderful results, but as a fixed educational policy it has many elements of weakness. The greatest good has come, not from the regeneration of the adult population, but from the number of young people who have been influenced to enter the schools and take up a systematic and thorough study of agricultural science.

I have included this statement on the conditions in agriculture because as has recently been said, "Most botanists have never been able to shake off the superstition that somehow or other the successful growing of crops is in part at least a botanical problem."

Suppose we turn our attention from applied botany very briefly to the pure science side of the subject, without which there could be no applied science worthy of the name. Suppose we were to select some of the big and vital things which have been done recently in plant physiology or morphology, in taxonomy or in ecology, in cytology or evolution, and go before the public to find out what is known in these fields of plant science. We should learn not only that the so-called educated public knows nothing of the facts but also that the individuals are extremely scarce who know that the field of botanical endeavor has become so large as to include any such subdivision of subject matter.

The facts which I am endeavoring to emphasize are: (1) that there is a large stock of extremely valuable knowledge in the botanical storehouse. Knowledge which has as many points of contact with the lives and practices of the people who compose the average community as can be established by any of the fundamental sciences. It is knowledge which applies directly to sanitation and maintenance of health, to the production and preservation of foods, and to increased efficiency wherever there is involved an intelligent control over plant life or plant products. (2) Just as obvious as the preceding and to those of us interested in public education equal to it in importance is the fact that there is but a very small portion of this knowledge that is being used by the people to whom it is most applicable and by whom the funds have been contributed which have made it available. Through the lack of judicious advertising and efficient salesmanship there is but little public demand for our goods and our most valuable stock is lying stored in the libraries unused.

Live contact has not been made between the research laboratory and the public mind. As a result the current which should transport the new knowledge to all the people and which should ever carry a fresh and vigorous supply of new workers back to the laboratories has not been functioning effectively in either direction. The public has not received just returns on its investment and it is only natural that the condition should be met by indifference and the withdrawal of support.

The U. S. Commissioner of Education tells us that the number of high school students taking botany decreased 45 percent between 1910 and 1915, and that less than 8 percent of the *total* enrollment studied the subject.

Botanists must decide if it is desirable for the present movement to continue. It means that in the near future botany will be studied only in the colleges and the universities, and that knowledge of plant life from the scientific point of view will gradually disappear from the people who receive their entire education in the elementary and the secondary schools. If this is considered desirable then the present course which is a sort of intellectual isolation is the correct one to pursue.

Any one who knows the subject matter of botany and who is interested in public education will look upon such a result as a calamity both to the science and to education and consequently to social and economic progress.

The attempted solutions which have been presented recently under the names of civic biology—elementary agriculture, general science, and other popular names have for the most part been unsatisfactory to the botanists. We feel as if we were trying under a camouflage of popular phrases, to teach our students a little botany without their knowing it. A rose by any other name may be as sweet, but the botany which has been offered under these assumed names has in most cases been so dilute that it is well nigh valueless. It perpetuates none of the valuable history of our science, meets the present needs only in the most superficial way, neither does it have any elements of promise in it for the future.

There is, after all, a good deal in a name and it is very unfortunate that botany has become a synonym of uselessness in the public mind. The name seems to stimulate about the same round of emotions in the average individual that the term nature study creates among the scientists, except, perhaps, that the latter are a little more violent. I believe that the good name of botany can and will be cleared of the unjust indictment of being useless. I also believe that science will soon form a part of the elementary school course, but I doubt if it can go in under the name of nature study.

The work done by the advocates of general science has, I believe, been done in good faith and it has served at least one excellent purpose. It has put the case squarely before us in a way that demands immediate attention.

It is not a simple problem. Many factors have contributed to the condition so tersely expressed in the report of the Commissioner of Education.

It seems to me that the discussions before the sections of Botany[1] and of Agriculture[2] respectively of the American Association for the Advancement of Science at its last meeting point us in the right direction. What these men have said I believe is in perfect harmony with what Prof. John M. Coulter has been preaching in season and out of season for the past five years or more. The apparent harmony of thought and purpose coming from what in the recent past have been considered rival camps is evidence that progress is being made. I believe that the time should come and I have faith that it will come, and that soon, when the agricultural courses both in the secondary schools and in the colleges will require a preliminary knowledge of botany. The agriculturalists need it and the botanists can do the job. *When agreement can be reached on what the content of such a course should be a big step will have been made toward the solution of our problem.*

I do not believe, however, that botanical courses in the secondary schools should exist entirely, or even primarily, as a preliminary to agriculture or horticulture. There are too many students who by the very nature of the case cannot continue in that direction and botany can be made to serve them in a more effective way.

I would like to see the courses in botany prepared for the high schools and for beginning work in college so that the points of application to the lives and interests of every one would be so numerous and so evident that there would be no question as to why they should be required of all, no matter what occupation might be chosen in the future.

In the administration of these elementary courses I would remove the handicap of extra hours which has been arbitrarily imposed on high school science and which is one of the chief causes of its unpopularity with students. I believe that five hours a week under a good science teacher will contribute as much to the education of a high school boy or girl or of a college freshman as an equal number of hours spent in any other subject even tho two or four of these hours are spent in the laboratory. The extra hour requirements in the elective sciences have caused the courses to be shunted into almost inaccessible places on the schedule and to be handicaped in numerous other ways. Botany as well as the other sciences would be greatly benefited if more men educated in science would sacrifice their personal interests and seek administrative position.

The best time for the training of a botanist to begin is while he is still at his mother's knee, and the more agencies which can be made to contribute to the desired end the better. Much effort may well be spent in general appeal and instruction by the press and from the stage and platform, but in the last analysis the regularly organized educational institutions will have to be held responsible for the job. Surely there is no place in the public school system where in this so-called scientific age the teaching of science should be neglected.

There is a rich fund of material related to the knowledge of, and control over, plant life which is admirably suited for the needs of all the children in the elementary school. The big reason why nature study has been a failure up to the present time except in a few isolated localities is that the scientists have not given it the attention it deserves. Adverse criticisms have been and are abundant, but constructive cooperation has been almost lacking.

There should be a direct and definite course of science teaching which should proceed in regular sequence through the elementary school and the high school into the university. I would direct no one into such a course simply because it led into the university, but because the lives of those who traveled in that direction would be enriched and enlightened every step of the way. It should make no difference whether an individual went but a short distance along the route or whether the entire journey was completed. He should be given direct and immediate values for the time and effort spent.

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[1]Science. U. S. Vol. XLVII. No. 1205.
[2]Science. U. S. Vol. XLVII. No. 1206.

Other sciences have established the connection between the fundamentals of their subject matter and the daily lives of the people without material loss in scientific value, and I believe that botany will not longer lag behind in the process.

The Botany Course as Proposed by the High School Conference Committee 1917

By Superintendent Henry Porter, Delavan

Last year a committee of this section outlined a course in botany and presented it at the meeting a year ago. Since then, I have used this course as outlined, and shall report on my experience with it.

Conditions for a fair trial of it were good, and great care was taken to give to the course only the time and emphasis that it ordinarily receives under any average teacher of science. The class was one of twenty and was made up of the typical groups of students found in any school. Four were students who did excellent work in any subject. Four were of the kind who did marginal work in every subject. Two were of the careless or irresponsible type. Two were of the variable kind that do a very high grade of work when they become interested enough to apply themselves and a very poor grade of work when they do not. Three were infected with the tendency to get thru with just as little work as possible, and will be designated here as slackers. And the other five were those who in all of their work are median students. From this it will be seen that the class was an average one: 4 excellents, 4 marginal, 2 irresponsible, 2 variables, 3 slackers, and 5 medians.

Our apparatus was such as is ordinarily found: five microscopes, fifty stained slides, a few chemicals, and some advance books for reference work.

To be sure that this course should receive the same emphasis and the same quality of instruction as that received in other classes, the program was so arranged that I taught three of the four subjects that most of this class took during the botany semester, and I have had just about the same training and experience in all three. In at least one of these, I was interested in a method experiment similar to the one in botany. The results, then, are not influenced by greater interest in a particular branch.

All papers written by the members of the class were carefully filed for comparison and at the end of the course a questionnaire was filled out. The course was started the last week in January.

I shall report results separately, for each of the seven sections of the course as outlined. At the start much interest was shown in the study of the flower. The geranium was first used until we could get no more, when we happened to bring in some primroses. These were immediately in demand and proved more satisfactory than the geranium. From the florist we found that they are as commonly grown. The large number of names in connection with the flower was retained by most of the class. Pollination and fertilization were taken up with the flower. This met with varying results. The terms such as micropyle, egg cell, embryo, endosperm were first introduced here. From results obtained there is a question as to the advisability of introducing these terms before the study of seeds is taken up or even before the alternation of generations has been studied near the end of the course. The data collected are as follows:

a. The excellents found it difficult to retain all of these terms, but thru effort mastered them.

b. The medians in most cases made grades just above passing.

c. The variables retained most of these terms and showed interest.

d. The marginals in every case failed, as did the slackers and irresponsibles.

These results indicate one of three things; subject matter too difficult, wrong method of teaching, or a wrong order of topics. I have taught this same material beginning with seeds and leading up to flowers and have not found such difficulty. The loss of interest leads me to conclude that in some way there should be fewer technical terms at the beginning of the course. It may be that most of the technical part of fertilization should be postponed until the latter part of the course. In that case the relation of the parts of the seed to ovule could be omitted from No. 4. In completing section I in five weeks, we found that some of the work had to be hurried over. We considered topic eight—delayed germination—much more interesting when seed corn testing was added. This seemed to enlist the interest of the irresponsibles more than any other part of the section. Number nine, seed dispersal, an elective, we were forced to omit because of time. However, the excellents in the class suggested a device which is now in operation. Next year's botany class was called together before the close of school in the spring and a plan for a summer botany collection was outlined. Specimens for number nine were included.

Section II

In section two—roots, stems, and leaves—much difficulty was found in understanding some of the physiological processes such as photosynthesis. From a study of the examination papers of the medians and marginals who showed lack of understanding when the section was completed, the conclusion is drawn that not enough chemical foundation is provided for in this section. Such answers as this were found in the papers: (a) "Carbon dioxide goes together to form oxygen." (b) "Sugar and chlorophyll mix to form a solution containing hydrogen." Statements of this kind came both from the marginal and median groups. If it can be assumed that the teaching was average, then there is a step lacking or else the fundamental step in photosynthesis must be partly omitted. I think the former is where the trouble lies. In the course in section 2, even the chemical elements in the soil are elective. Since not all botany pupils have had physiography, we cannot assume that they are familiar with these elements, nor with the foundation chemical actions, nor with the nature of elements and compounds. To leave out the chemical processes in plant life is to weaken the course too greatly. To make up for the lack of this work in class I find from the reference work done by the excellents and the variables that they did much reading to make their understanding of these topics clearer. From this point on the variables in both cases did work of the ninety grade type. We cannot leave the chemistry out, neither can we expect the poorer students to do it outside of class.

Closely connected with the chemical elements in the soil is the topic of fertilizers and some experiments with them, it seems to me, would be worth the time given.

In the osmosis demonstration, only the excellents were much interested until the experiment was tried with a thick glucose solution and a tube a number of feet long. If this experiment is worth performing, it is worth doing on a large scale. Messing with an egg or a potato and a millimeter tube is unprofitable.

In number 4, half of the class worked on the dicotyledon stem first, and the other half on the monocotyledon. The latter group understood the structure better. The simpler construction of the bundle in the monocotyledon may account for this.

In number 7, the question of decorative planting is made elective. A questionnaire was submitted to the class and among other questions was this one: "Would you make use on your own home grounds of class instruction on what shrubs to plant?" The answer in all but two cases was "Yes," and the enthusiasm displayed over this question made me feel that I was not alone in the keen feeling of regret often experienced in the inability to recognize *domestic* flowers and shrubs. This may belong to the sphere of the specialist,

but I am sure I am not alone in the willingness to give much of the technical for this knowledge that could be used in common life. To make the home more beautiful may belong to the artist, but so far as a knowledge of the proper plants is to help in this, I am of the opinion that it is the business of the botany department. If we have to sacrifice something, topics such as 11 and 12—translocation and transpiration—could better be given less time than the other topic omitted.

At the end of five weeks a thoro test on the understanding of the work of Section II was given. The following table gives the results as near as can be told by examination papers:

GROUPS	GRADES	SECTION CAUSING MOST TROUBLE
Excellents	88 95 98 93	Stem structure.
Variables	88 89	Stem structure.
Medians	65 80 71 77	Photosynthesis and respiration.
Slackers	55 60 70	Photosynthesis and leaf structure.
Irresponsibles	69 71	Photosynthesis and stem structure.
Marginals	60 62 68	Osmosis and all processes involving chemical action.

This table bears out the observations which led to the suggested changes made earlier in this section, i. e., a better chemical foundation, a study of both monocotyledon and dicotyledon stems, more work with chlorophyll and the shortening of sections 11 and 12—translocation and transpiration.

Section III

To the boys of the class, the study of algæ was one of the most fascinating. This was especially true of the irresponsible and variable groups. This may have been caused by a boy's liking for water and mud. It was not long before all types of algæ were being brought in for inspection. It was also found that thruout the course in the alternation of generations and reproductive systems that constant references were being made to the algæ. In fact, from observation of this class, it would be very difficult to give clear notions of such bodies as spores, gametes, zoospore, oospore, or to give appreciation of a continuous development without a study of algæ. This development and the life relation discussions growing out of it were considered by the best of the class the most interesting and profitable part of the course, as will be shown by the table at the end of this paper. This being true, the question may seriously be raised concerning the making of this section elective instead of essential.

In working with section III, such interest was centered upon plant diseases that we were able to do much extra work with the pathological side. One of the requirements for the next year is a collection of rusts, smuts, mildews, leaf spot diseases, or any other plant diseases observed. This is to be part of the botany collection to be made thru the summer, just as an insect collection is made for zoology. Without exception, the excellents of the class are making these collections just for the interest centered around them and for future work in biology.

In this connection, text material on the life of Pasteur is greatly needed. Some notion of his wonderful contributions and of the great debt civilization owes to him is fundamental and should be given at this point.

Section IV

In trying to complete the work on the bryophytes and pteridophytes in one week, we were compelled to hurry so that the students became lost in the maze of new terms and structures, and they failed either to become interested or to master what I attempted to teach. I am convinced that I had better have

left the topic out than to have given it the short time that I did, and yet, I realize that some knowledge of this group of plants is vital if one is to get a notion of the great unity of the plant world, and of the evidences of the evolution of plant forms.

Sections V, VI and VII

In section V, reproduction in gymnosperms and angiosperms, emphasis was placed on the fact that this completed the cycle from flower to flower. By deferring some of the work on cross and self pollination, the work in this section could be completed in less than two weeks. Part of this time could be given to bryophytes and pteridophites and clearer understanding would enable a class to cover the next section in less time. By changing the order of VII, classification, and VI, heredity, the classification of flowers could be made to come after this completion of the cycle, as it logically should. This would give time for the students to apply their knowledge on after school field trips and thus give familiarity with the wild flowers.

The study of heredity is without doubt one of the most vital. The life laws and theories in our class formed subjects of most profitable discussions, but in the study of the life of Mendel and the Mendelian laws we were greatly handicapped by lack of reference material written so that a high school class can understand. This, I believe is common. The same is true for the life of Linnaeus. If these, with work on the life of Burbank and some of the leading workers of the present, were made available, then this section would be one of the most valuable and interesting.

A comparative table of grades of work done in different sections by the various groups is given below.

	Sec. I	*Sec. II*	*Sec. III-IV*	*Sec. V, VI, VII*
Excellents	92 87 94 100 Av. 93	88 95 98 93 Av. 93½	96 96 99 93 Av. 96	94 95 92 96 Av. 99
Variables	86 87 Av. 86	88 89 Av. 88	92 96 Av. 94	90 94 Av. 92
Medians	71 90 82 78 Av. 89	65 80 73 71 Av. 77	70 90 78 81 Av. 71	70 72 70 71 Av. 69
Slackers	70 70 70 Av. 69	55 60 62 Av. 70	63 70 70 Av. 75	63 69 67 Av. 70
Irresponsibles	60 65 Av. 62	69 71 Av. 70	68 75 Av. 71	60 62 Av. 61
Marginals	59 51 60 Av. 69	60 62 63 Av. 68	66 50 58 Av. 58	50 60 57 Av. 60

This table indicates a number of things: (a) That the course was a comparatively difficult one. (b) That work in the several sections is of nearly uniform difficulty and the time element is about correct. (c) That divisions two and four were the most in need of more time or else a rearrangement.

At the end of the course a questionnaire was submitted to the class. This was done after all grades were in and in such a way that the personal element did not enter in. It must be remembered that the botany teacher taught most of the class in three of their four subjects and that there was therefore no tendency for the teacher to influence the result. A similar questionnaire was given in geometry to avoid any undue attention to one subject. No influence was exerted in favor of any branch.

In this table a number of things are noticeable: (a) This course is comparatively a difficult one, half of the class finding it most difficult of all subjects and five finding it second in difficulty. (b) In interest and usefulness, botany received more than its share of supporters, seven giving it first choice and five

		List in Order of Liking Your Four Subjects		%	List in Order of Difficulty		%	Which Section Did You Like Best?	Which Was Most Difficult?	Which Do You Consider Most Useful?	Should Botany Be Prescribed or Elective?
Excellents	1	Botany	1	...	Botany	3	...	IV.—V.	III.—1	IV.—V.	Prescribed
	2	"	1	...	"	3	...	IV.—V.	III.—1	IV.—V.	"
	3	"	1	...	"	1	...	IV.—V.	II.—4	IV.—V.	"
	4	"	1	160	"	4	90	I.—VII.	IV.	III.—2	"
Variables	1	"	1	...	"	3	...	IV.—V.	IV.	IV.	"
	2	"	2	140	"	3	80	IV.—V.	IV.	III.—1	Elective
Medians	1	"	1	...	"	1	...	III.—IV.	IV.	VII.	Prescribed
	2	"	2	...	"	2	...	III.—IV.	IV.	II.—10	"
	3	"	3	...	"	1	...	III.—IV.	II.—10	III.—2	"
	4	"	3	110	"	1	150	VII.	II.—10	I.—2	"
Slackers	1	"	2	...	"	2	...	I.	IV.	III.	"
	2	"	4	...	"	1	...	I.	IV.	III.	"
	3	"	4	66	"	1	146	I.	II.—4	I.—1	"
Irresponsibles	1	"	2	...	"	2	...	I.—III.	IV.	III.	Elective
	2	"	1	140	"	2	120	III.	II.—4	II.—6	"
Marginals	1	"	2	...	"	1	...	III.	II.—10	III.	"
	2	"	3	...	"	2	...	III.	V.	III.	"
	3	"	3	93	"	1	146	I.	IV.	VII.	Prescribed

giving it second choice. It is also noted that the best students all gave it first place. A rather remarkable thing, too, was the giving of first or second choice even tho in a number of cases pronounced most difficult. (c) The life relation discussions including evolution and biologic theories seemed to have been responsible for the holding of interest in the excellents and variables, and most difficult for the marginals and medians. (d) The most interesting data are in the final columns. Botany in our school has always been elective. Three years ago only six girls elected it. The size of the class has gradually grown to the present number. Despite the difficulty of the work, fourteen of the class voted that it be a required subject. This seems remarkable in view of the fact that students usually believe strongly in the elective system. A notable thing is the fact that every one of the medians and slackers thought it should be made a required subject.

Deductions

From the trial of this course a number of conclusions may be drawn. (a) Changes such as suggested might serve as an improvement. (b) The course as it stands is a difficult one, and the parts giving most trouble are those dealing with natural law discussions, chemical processes and scientific terms. One of two remedies can be made here—the course made easier, or else a better foundation in science given the first year.

(c) The life relations, biologic theories, plant evolution and tendencies in research are features considered most interesting and useful by the most energetic in class and should therefore be emphasized. (d) These same theories in many cases were most troublesome to the marginals. This was especially true of questions of heredity. Better organized text material and reference work is needed here. (e) Botany as organized in this course as to time and order of topics is such as to place it above other subjects in the curriculum in likeableness and usefulness, in the students' own opinion.

A great educator states, "School is not only a preparation for life. It is life." This view is now accepted. Education is successful not only as it trains for a full life in the future but as it gives a full life in school. This being the case, the student must be made to feel the usefulness of a subject, made to appreciate its value, and live in it to the fullest extent. The student's own opinions on a subject of this kind then is one big barometer for the place the subject should have in the curriculum. When this opinion is given and confirmed by pedagogical theory and practice then we are safe in acting. By this barometer, botany is assured a high place in the course of study. Living is the business of every organism. Life is the most vitally interesting and useful problem for any human being. To understand life, a study of life is essential. Life relations, life processes, and the steps and methods thru which present organisms have evolved are concepts prerequisite to full understanding. When botany is given as a vital study of such essentials, as in this course, then it is meeting a need that can be met by no other subject. And it is fulfilling its purpose in the function of education by giving ability to live fully and understandingly in school, and preparation for efficient control of life and life associations in the society beyond graduation.

4. Classics Section

The Section was called to order by the Chairman, Professor H. J. Barton. The business of the Section was the election of a member of the executive committee. Miss Julia F. Evans, Proviso Township High School, Maywood, was elected for a term of three years. The executive committee as now constituted for the academic year 1918-19 therefore consists of the following members: Miss Harriet L. Bouldin,

Springfield, Chairman; Miss Mima A. Maxey, Carlyle, Secretary; and Miss Julia F. Evans, Maywood, Illinois.

The Chairman in his introductory remarks called attention to the spirit of unrest that was abroad in regard to school programs and to the need of careful consideration of changes proposed. He then introduced Miss Grace M. Warner, of Moline, who presented the following paper on **"Latin Prose Composition."**

Latin prose composition, I am inclined to think, has presented a greater problem in the secondary schools than any other feature of Latin instruction.

This is partly due to external conditions of limited time, large classes and crowded programmes, partly to the attitude of the human material with which we have to deal; but more largely, I am sure, the problem arises from the fact that for prose composition the exact ground to be covered in each year has been less definitely and progressively marked out, the purpose and attainable results less clearly defined in the mind of the average teacher and therefore the methods more or less uncertain and tentative. When you are not quite sure where you are going, you are apt to zig-zag a bit by the way.

Although there are brilliant exceptions of teachers whose classes love their Latin and incidentally cry for their prose, it is not far from the truth to assume that the general attitude towards Latin prose composition is one of dread, as of something extraneous to the real work in hand which is the reading of a certain amount of Latin text, arbitrarily fixed for us, and taking into small account the oft-varying quality of class personnell and more or less crowded programmes.

We have so many hours of recitation as our asset, so much reading to be produced from that asset, so many liabilities of dullness and indifference to be charged against it, that there is small wonder if we are tempted to crowd prose under the item incidentals, and let it go at that.

The average allotment of forty-five minutes on the school programme after deducting the passing of classes, the taking of roll, the assignment and explanation of the morrow's lesson, the possible return of corrected papers, with comments, becomes never more than thirty-five, very often only thirty minutes, a very *limited* period, during which to develop a chapter of Caesar, or two sections of Cicero, or thirty lines of Vergil. Our time is further curtailed through the occurrence of holidays, the various interruptions to the school schedule, the lost days at the beginning and end of each semester for organization and examination, reducing considerably the number of our five short periods a week during the thirty-six weeks of the year.

And considering that we are expected to cover with intelligence and understanding, together with a working knowledge of the historical and literary material pertaining thereunto four books of the Gallic War, six or seven Orations of Cicero and six books of the Aeneid, the equivalent of one prose lesson a week in addition seems the proverbial back-breaking straw.

You will agree that this is not an exaggerated statement of our time problem.

In the very large majority of high schools the Latin teacher's programme contains twenty-five, very often thirty, hours of teaching besides study-room and administrative assignments, and may include from three to six different kinds of classes, possibly entirely different subjects.

Aside from preparation and planning of daily work, when is the time to be found for correction of prose papers? But let us console ourselves, for unlike our esteemed colleagues of the English department our particular brand of language teacher is supposedly clever enough to evolve out of nothing the time for the handling of written work.

The teacher of the ancient classics has so long been on the defensive for his subject, hears so often from pupils and parents of the time-consuming difficulties of his requirements, and even though his own convictions be of granite the constant dropping of complaint tends to wear them down and he hesitates to add the considerable weight of Latin prose to so much unpopularity.

As to the other side of the equation, that of the pupil, we find a general attitude of hostility. If he is at all interested in translating, he too feels the prose as an unwelcome interruption to the reading and if by reason thereof his grades decline, he at once acquires the settled conviction shared by his parents, that prose was designed merely as an effective instrument for killing the little joy he might otherwise find in a naturally dreary subject.

The modern youth is first of all a social animal, very immature in his sense of responsibility, avid of pleasure and very averse to unrewarded exertion. The average Latin pupil is undertaking in addition to this subject, three, often four—himself is authority for my characterization—much easier, much more attractive, much more profitable subjects which naturally demand his first attention. And besides, he has not very much time for study.

Outside of school there are the social calls of home, church, the movies, Boy Scout and Y membership and the like. Within the sphere of school football and basket-ball practice, play rehearsals, debating and oratorical contests, literary and social clubs, the school paper, class annual and class parties. While these activities are each and every one worthy and profitable in themselves, they fill in the aggregate so large a part of the high school pupils' time and attention that it is sometimes permitted to wonder if, in the organization of the modern high school, study is not the last thing taken into consideration.

The aim of present day pedagogy seems to be centered in the effort to serve mental nourishment in small and attractive portions. From the kindergarten to the college gate the doctrine that the child thrives best on what he likes best, that he must be forced to do nothing against his natural tendencies, has so permeated his entire environment of home, social world and school that naturally he reacts negatively towards whatever presents continuity of effort or difficulty. In which he is not greatly to blame. For his most frequent and to him all-sufficient comment of condemnation, "It's too hard" is merely the reflection of his easy-going, over-indulgent environment.

But the crux of his distaste, I believe, is to be found in the character of the usual lesson assignment and the consequent wrong method of preparation.

To begin with the lesson is too long, from six to twelve written sentences with accompanying grammar principle and vocabulary for memorization.

The written assignment is concrete. Its accomplishment represents the fulfillment of his task. Therefore to it without delay and in this wise. A laborious metamorphosis of the English words into some sort of Latin equivalent worked out with much turning of leaves in consultation of the English-Latin vocabulary and of the grammar, chiefly in search of forgotten forms. That done and out of the way, if there is any time left and chiefly to please the teacher, he may glibly memorize the grammar rule and take a shy at the vocabulary.

Sum total: a neatly written paper, a few ill-assorted ideas vaguely attached to the words of the grammar and another study-hour comfortably gone over the rill!

In another week the process is repeated and so on ad finitum and, do you wonder, ad nauseam?

In view of these obstacles and dissatisfactions, the lack of time, stress of work to be accomplished, the difficulty of enforcing adequate preparation outside of class; and because the prose comes as an unwelcome interruption to the reading, because its beneficial results are too often apparently lacking and the effort to hold to the prose requirements seems a heavy payment for very little value received, would it not be better, we ask ourselves, to pitch overboard the incubus of prose composition and sail comfortably on our way without it?

The vast majority of those who study Latin never go beyond the second year; of those who finish the four years of high school Latin, many pursue the subject no farther even if they go on to college. Would it not be more profitable to devote what time can be spared from the text, aside from the necessary form-drills, to formal instruction in word formation and English derivatives? This last makes a greater appeal to the practical than anything else in the study of Latin and will be remembered long after other things are forgotten. Let us see if we can find the answer to this.

We are told that all language study has both a disciplinary and a cultural value. The conscientious Latin teacher has not sinned in disregarding the former. On the contrary, in the effort to meet one class of objectors to our subject in their loud claims for the superiority of the scientifically-trained mind, and out of the Latinist's ingrained respect for accuracy and form, he has rather erred on the side of over-valuing discipline. The arguments for Latin prose composition have been based largely on its disciplinary worth. We all have them at our tongue's end; but permit me a brief resumé. In a report issued from the Adjutant General's office, failures among the officers of the reserve corps were ascribed to slouchiness, inability to articulate clearly, to think accurately, and inability to stick it out when difficulties were thickest. What fundamentals were lacking in the education of these failures? Briefly those qualities which are described by the term clean-cut. A clean-cut habit of body, a clean-cut faculty of speech are outward evidences of a clean-cut forcefulness of mind. "We wield in Latin grammar and prose composition," said Prof. Kellogg, "an implement as keen as mental arithmetic." To cleanly detach the thought embedded in the familiar terms on one's own tongue and to incase it again in the more intricate and delicately adjusted sheath of the highly inflected Latin means conscious exercise of the essential powers of mind; keen observation, memory, judgment, accurate reasoning, balance. In other words the translation of English into as exact and logically proportioned a medium as Latin means constant training in the art of thinking, that quality which differentiates humanity from the lower creation and by which it treads the earth with face turned to the stars. Let us consider for a moment the claims of language as such. Reduced to its simplest terms is not our real goal in the study of Latin to acquire the power to read and understand Latin; just that, nothing more and nothing less? Language first came into being as a means of communication between man and man. Its development and finer uses are a fuller and more complete self-expression and a fuller and more complete understanding of the thought expression of others. We study a new language for the ability to speak with and to understand a larger number and variety of our fellow-men; or in the case of a tongue which is no longer spoken in order to enjoy the thoughts of those who once spoke and thought in that particular language form.

The beginner in translating is painstakingly careful to render the Latin endings into their exact English meanings. As he deals with longer sentences developing into connected paragraphs, his attention is drawn more and more from the form to the content. Gradually carelessness develops and a lack of feeling for the imperative relation between form and thought.

A reversal of the process of translation in prose composition with its rigid inspection of the word as to meaning and relation to other words, and the consequent logical determination of its form, with its weighing of word, phrase and clause, is the speediest and best possible corrective to carelessness in translation. And the time thus expended, if expended to right purpose, will in the end be more than regained by speed in reading.

How shall the prose lessons be distributed? Shall we keep to the traditional one lesson a week? Shall we have a continuous week of prose every six weeks, or shall we lump the semester's work in a month's orgy of prose? These last two methods offer a much desired continuity, more definite results for the time being and bring a satisfactory sum of accomplishment. On the

other hand they mean a longer interruption to the reading and a greater likelihood of forgetting the prose between-time. There is another way, also open to serious objection, because of the short recitation period, a little prose every-day. That could be managed by assigning the grammar principle and vocabulary for preparation, spending twenty-five minutes of the day's recitation period on discussion with one or two sentences written in class as illustration; this to be followed up on the succeeding days of the week by one or two sentences written in class without previous preparation and dealing with material from the day's reading. By this method we cover the weekly prose assignment, with fresh material direct from the day's reading we make the prose an integral part of the day's lesson and the ex tempore writing becomes an adventure of real interest. In the general the more the translation of English into Latin is confined to the class-room the better the results. This should be the unvarying practice for all the work of the first year, and as far as possible in the second year; at least until the prose lessons begin to assume the form of continuous paragraphs. By assigning no written work for outside preparation a more careful study of grammar principle and word-list is assured, the meaningless thumbing of vocabulary and grammar is discouraged, the temptation to dishonesty removed, and right habits of study promoted. These established and the idea that prose is all in the day's work thoroughly implanted, with increasing facility in translation whether from Latin to English or English to Latin the third year may bring greater latitude in method and the introduction of more formal lessons for outside preparation. The average prose composition book contains far too much material both in vocabulary and syntax. A small working vocabulary thoroughly learned by constant drill is a real foundation for the building of a wider knowledge of words through reading.

The same is true of the essentials of syntax. There should be a definite, carefully prepared outline of grammatical principles to be covered in each school year. The Prose Outline issued by Miss Sabin from the University of Wisconsin for the Latin teachers of that state and the one in use in Oak Park formed the basis for the following tentative outline, which I have taken the liberty to modify in some respects. A small body of principles reduced to the sine qua non means power; to attempt more than that in the face of our limitations of time and material spells weakness and distaste.

II Year.

Principles of agreement.
Common Case Constructions (Byrne.)
Simple Relative.
Indirect Discourse.
Purpose-Adverbial and Substantive.
Indirect Questions.
Cum Temporal.
Quod Causal.
Participles.
Gerund and Gerundive, (Only with ad and causa.)
Result-Adverbial.
Postquam-Ubi.
Passive Periphrastic.

III Year.

Genitive-Adjectives-Verbs.
Dative-Reference-Possessor.
Accusative-Two accusatives-Cognate.
Ablative-Separation, Source, Difference, Price.
Commands-Direct-Indirect.
Hortatory and Optative Subjunctive.
Relative-Characteristic and Result.

Substantive Result.
Antequam, Dum, Cum, Causal and Concessive.
Conditions.
Active Periphrastic.

In considering prose for the fourth year, I am torn between my convictions of its necessity as a corrective of the ever-growing tendency to laxness and looseness in translation, with the desirability of a grammar review for those going to college and my appreciation of the former obstacles formidable enough in the first years, but now of increased seriousness. In this year, we have a greater amount of text, a wider range of collateral material for its illumination, a more conspicuous disparity between the centent and vocabulary of poetry and the exigencies of prose, and a deeper absorption on the part of the class in the joys and activities of the senior year. Nevertheless, I feel that it should be undertaken. The following suggestion, however, is offered more as a compromise than as a solution of our problem.

IV Year.

A limited amount of simple connected prose intended to review syntax and forms of previous years and to act as a check upon looseness and inaccuracy in translation. For those preparing for college, more difficult and more extensive work for instruction outside of class.

Then let not Latin prose composition be an additional burden, the means of grace through sorrow, but let us regard it as the balance wheel, the check on accuracy which is apt to be deflected by translation. "For writing," we are told, "maketh an exact man and accuracy is the soul of scholarship." In pursuit of the means to our end and its valuable by-products, let us not forget that our summum bonum is the ability to read Latin with ease and enjoyment. We attain ease by the upward road of discipline and behold! enjoyment, ease, twin brother beside him on the sun-lit hill.

The paper was followed by animated discussion and various questions were asked concerning the best method of handling the Latin Prose lesson. Some advocated one lesson a week, some a little prose each day, some even suggested the possibility of a week devoted to the subject. It was agreed that as regards the object of Latin writing, it was to secure larger facility in translation while at the same time a fine training was developed in the interpretation of the meaning of English and the relative importance of words and clauses.

In introducing Professor Arthur R. Crathorne of the Department of Mathematics of the University of Illinois, the Chairman spoke of the vigorous discussion in educational circles as to transfer of training and that while teachers of the classics felt competent as regards themselves to pronounce whether their classical training had been productive of such transfer, still it was desirable to approach the subject from another side. This was being done by the committee of the American Mathematical Association and Professor Crathorne had been asked to present a paper in which he would state what progress his own sub-committee had made. Professor Crathorne then spoke as follows:

Correlations Among High School Subjects

During the past few years teachers of mathematics have been subject to much criticism. A great deal of this criticism has been self criticism and has manifested itself in many teachers meetings for discussing content of courses, in the printing of syllabi of revised courses, in the publication of new text books, in the founding of societies and periodicals for the improvement of mathematical teaching. It has added the words "correlation," "unification," "efficiency," "laboratory," "Perry Movement," to our every day vocabulary. One especially important result was the formation of the International Commission on the Teaching of Mathematics which has succeeded in bringing together in much closer union than heretofore the teachers of elementary and of advanced mathematics.

But much of the criticism has not been self criticism. The general educator and the public took up the question from another point of view. Some began to be skeptical as to the study of mathematics at all. They scoffed at the idea of usefulness in algebra or geometry. Where the logic of their arguments was weak, vehement phraseology was used. We heard many such phrases as "Our educational system is rotten," "Mathematics is on the operating table," "Why should we worry our boys and girls with the foolish puzzles of algebra," "Algebra is a timeworn fetich of bygone ages," and so on and on.

More recently the ideas of those educators who question the position of mathematics in our secondary schools have been crystallized into very definite shape by two or three men of enough prominence to attract general attention outside of educational circles. Among these criticisms we find: The subject is too difficult; The average child is not mathematically inclined; Algebra is mysticism to the parent; The present dominance of mathematics is due to its service to colleges and universities who use it as a sieve for sorting out young men and women; The time at which it is studied, the manner in which it is taught, the amount to be covered, are determined by tradition not by any consideration of the needs of the child.

It should be emphasized that these criticisms come from men who are not particularly prejudiced against mathematics. Many of the criticisms have been raised by teachers of mathematics themselves. The whole subject is but an extension of the discussions of the past two or three decades within the mathematical family where much time and energy is spent on the theorem, "Some mathematics should be required of all high school pupils." We would like to prove the theorem. If it cannot be proved we would like to know the least number of assumptions, conditions and exceptions that should be put into the wording of the theorem.

The psychologist, the educationalist, and the layman have attempted solutions and have as much interest in the question as the mathematics teacher. The layman on the whole is a friend of the mathematician and urges him on to take up the argument. He hopefully but hesitatingly suggests, "Doesn't mathematics improve the mind?" At this a smile of ghoulish glee lights up the faces of the opponents of required mathematics. They have been waiting impatiently for the opportunity. They hasten to say that the question is the very ancient and mouldy one concerning formal discipline or general training or faculty psychology. Some time, somewhere there is supposed to have been a man, or a class of men, who had a theory that there was a thing called the mind and that this thing had certain powers, "reason," "memory," "judgment," which were to be trained and strengthened by certain studies, and this training and strengthening process was defined as education. Some educators tell us that this formal discipline is a "heritage from the past," "an outworn psychology." "Memory and reason are just words, there are no such things." "Only memories and reasonings exist." "One studies Latin to become proficient in Latin, algebra to learn algebra." "A course in geometry helps a pupil in a second more advanced geometry, but has no effect on a course in history."

But other men tell us that, while formal discipline as above defined no longer has any advocates, yet there is a fairly well defined theory, believed by most psychologists, that training gained in the study of one subject is of use in the study of some other subjects. Psychologists use the word "transfer" in this connection. The real question is the amount, direction and method of transfer.

One of the first steps in answering the question "Should subject X be required of all high school pupils," would be then, to investigate the "spread" "transfer," "generating power" of X. It is of course a formidable problem. We all believe that a boy who has passed a thorough course in Latin or in algebra will do better in many new subjects than the boy who had not taken them. What these new subjects are and how much better the first boy will be in them are things to be found out. The number which represents the "how much better" we might call the "factor of transfer" or "coefficient of spread."

Last year the American Mathematical Association officially took up the question of the defense of mathematics. A committee was appointed, called the National Committee on Mathematical Requirements. The purpose and scope of the work of the committee is indicated in the following list of questions adopted by the committee as a basis of procedure.

I. What general education values (utilitarian, disciplinary, cultural) can actually be secured by the study of mathematics?

II. What should be the primary purpose of mathematical instruction?

III. What topics and what treatment of these topics will best serve to realize the values and purposes under I and II?

IV. How much of the content included under III should be required (a) of all students in secondary schools: (b) for college entrance; (c) of all students in college?

V. What should be the preparation of teachers in secondary schools and in colleges?

In connection with this program, a sub-committee on scientific investigations was organized. Among other questions it was decided to make a thorough study of the theory of correlation as applied to educational data to see if there can be any connection between the so called coefficient of correlation and the above mentioned number which was to measure the "how much better" an alegebra student will be in some other subject. Several thousand complete records of high school pupils in different parts of the country are being collected to form a statistical basis for the investigation.

The first problem was formulated something as follows: If subject A is considered by educators to be a fundamental part of all secondary curricula, does proficiency in mathematics count more or less than proficiency in proposed substitutes for mathematics towards an increase of proficiency in A.

The sub-committee is still at work on collecting and working over the data. The war has played sad havoc at times. But I have some results which may be of interest. A debatable list of high school subjects was chosen as containing those of fundamental importance. Of these we have at the present time worked through English, Latin, history, German, geometry and civics. The correlation coefficients for algebra with each of these for six different high schools were worked out. Then instead of algebra some algebra substitutes were worked over in the same way. These were stenography, bookkeeping, domestic science and manual training. Finally for comparison purposes, freshman English was put through the mill. There resulted some 250 correlation coefficients.

I will take a little time here to explain in a non-mathematical way, the ideas underlying the correlation coefficient.

The diagrams, Figs. 2, 3, 4, show the distribution of 231 average grades in algebra and in Latin. Fig. 3 shows the actual distribution for 231 pupils from the Urbana high school. These 231 pupils received grades in algebra

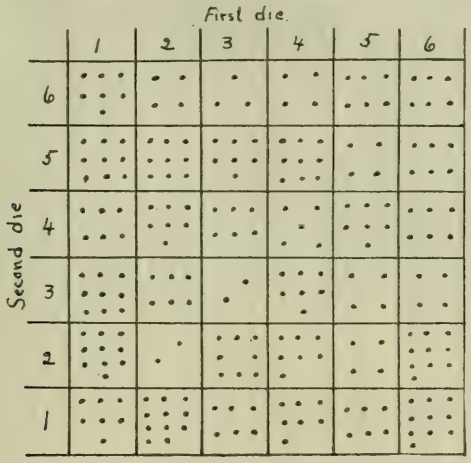

Fig 1.

and Latin. Each pupil is represented by a dot. The column in which the dot lies indicates the grade in Latin. The row gives his grade in algebra. Thus from Fig. 3 18 pupils received grades between 83 and 87 in Latin, and between 88 and 92 in algebra.

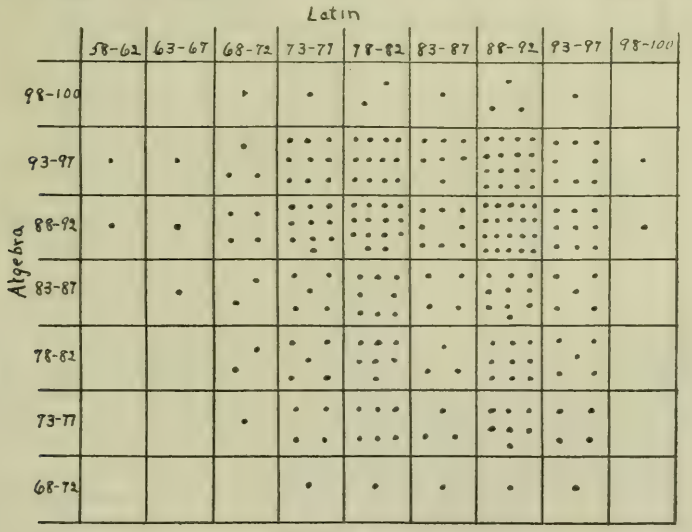

Fig 2.

Fig. 2 shows a chance distribution which might have occurred if the 231 grades in Latin had been given to the algebra pupils by lot. Fig. 1 shows the

chance distribution of 231 throws with two dice. For example in the 231 throws the five spot in the first die and the four spot on the second die turned up 7 times. Here we get a fairly even distribution over the whole diagram. This is not so in the chance distribution of the Latin grades. Each grade is not equally likely to occur like numbers obtained by throws of a die. Latin grades at this school were distributed as follows:

98-100— 2 grades	73- 77—35 grades
93- 97—33 grades	68- 72—13 grades
88- 92—66 grades	63- 67— 3 grades
83- 87—27 grades	58- 62— 2 grades
78- 82—50 grades	

If each of these 231 grades had been market on a ball and all the balls had been put in a bag and thoroughly shaken and then had been drawn by the student a possible distribution is shown in Fig. 2.

Finally, suppose that there was such a rigid connection between algebra and Latin that when given a pupil's grade in algebra the grade in Latin could be computed by some rule. We would then have a distribution typified in Fig. 4. Here the grade in Latin was obtained as follows: Multiply the algebra grade by 11, subtract 101 from this product, divide the difference by 10½.

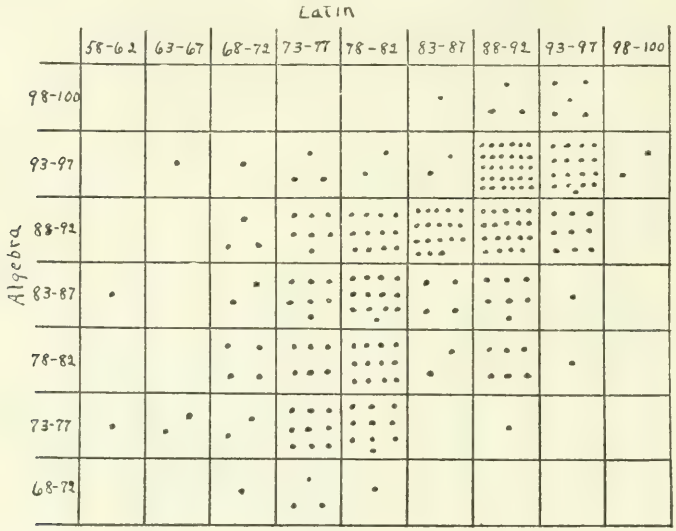

Fig 3.

Placing Fig. 3 between Fig. 2 and Fig. 4, we see that in Fig. 3 there has been a sort of movement of the dots from the chance distribution of Fig. 2 to the diagonal line distribution of Fig 4. Roughly speaking, the measure of this movement is given by the coefficient of correlation. It measures for us the tendency of a high or low grade in one subject to be accompanied by a high or low grade in another subject. For the distribution in Fig. 2, the correlation coefficient is 0; for that in Fig. 4, it is 1, the highest possible. I shall not go into the mathematical theory of obtaining the coefficient for the distribution in Fig. 3. It turns out to be 0.60 and is the measure for this particular high school of the general tendency of a high or low grade in algebra to be accompanied respectively by a high or low grade in Latin.

If the movement of the dots is in the opposite direction towards a distribution along the diagonal from upper left hand corner to lower right hand

corner, the correlation coefficient is negative and measures the extent to which a low grade in the first subject is accompanied by a high grade in the second.

There has been some discussion as to what can be considered as a high coefficient in this connection. We assumed that English-English coefficients should be very high. The average of many coefficients gave the following:

English-English (consecutive courses).....0.65
English-English (one year apart) 0.60
English-English (two years apart) 0.52

Correlation coefficients of freshman English with each of the six subjects were generally high in all the high schools (with the possible exception of civics). They were arranged in the following order from highest to lowest—English, Latin, history, German, geometry and civics, varying from an average for the six schools of 0.35 for civics, to 0.58 for English. For algebra the general run of the correlations did not vary much from the figures for English but the order was different being—geometry, Latin, German, history, English,

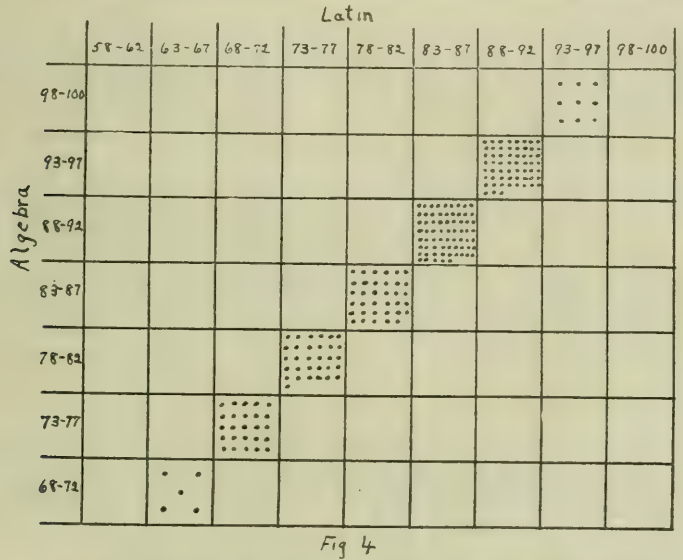

Fig 4

civics, the average varying from 0.39 for civics to 0.52 for geometry. It was noticeable that the correlations algebra-geometry and algebra-Latin, were so nearly alike that it was hard to separate them, one being 0.52 plus, the other 0.52 minus. There was then a jump to the correlations of stenography with the six subjects which were mostly in the thirties, as there were those of bookkeeping and domestic science in the order named. Manual training finally wound up the list with generally very low coefficients, mostly not greater than their probable errors. Among the 250 correlations computed there were only two negative correlations, manual training-Latin for Topeka, and bookkeeping-civics for Spokane.

While mathematics was the center of attention, some side issues may be of interest to a classical audience. The average grade of the Latin groups was generally higher than the other groups. The connection between two English courses separated by two years was about the same as the connection between a Latin and an English course in consecutive years. The stenography

Latin correlations were higher than any other stenography correlations. The Latin bookkeepers also showed up best and the Latin-manual training pupils the worst.

The work of the sub-committee is not nearly complete, but you will get an idea from this paper of what we are trying to do. Our object is not primarily to find arguments in defense of mathematics, but an open minded investigation of correlation theory applied to school grades, with enough data behind it to make the results conclusive.

The next number on the program was a paper by Miss Lucia C. Spooner, of Evanston, Illinois. Under the title **"Supplementary Topics,"** Miss Spooner gave a valuable resumé of the material that could be used and the topics that could be introduced to arouse interest and stimulate scholarship in the study of Cæsar, Cicero and Vergil. Her paper follows:

Never has there been a time when material for supplementary work in Latin has been more abundant and interesting and modern enough to suit the most radical. Especially is this true of the material for second year Latin.

The present age is interested in war and has found that there is much that is usable in the methods and practices of ancient warfare and much to be learned about the topography of France from the commentaries of ancient writers.

The basis of the first fourteen topics is, therefore, a comparison between the military arrangements and practices of the armies of the Roman Republic and those of our own day. Extremely interesting information upon these topics may be found in the Introduction to Dr. Kelsey's new text, "Cæsar's Commentaries," in a paper by Dr. D'Ooge, "Ancient and Modern Warfare," which has also lantern slides to accompany it, in Mr. T. Rice Holmes' "Cæsar's Conquest of Gaul," and in the files and current numbers of the Classical Weekly and of the Classical Journal.

As an illustration of what this material is and how it may be used, let us consider in part several of these topics, such as numbers 3, 9, 10 and 13 of the outline.

The armor of the Roman legionary soldier consisted of a helmet of leather or metal, a leather coat strengthened with bands of metal, a shield and perhaps a greave. His pack, sarcina, strapped on a forked stick, was carried over his shoulder. He carried a javelin or *pilum* which had a long iron point, and also a two-edged sword, a gladius.

These have all been reproduced for use in the present war.

Dr. Kelsey tells of the equipment of the Italian barb wire cutter of today, who wears a helmet, a cuirass and greaves and of the German shock troops, completely equipped with armor. The helmet of the French soldier and that of the German as well has much in common with the helmet of the ancient Gaul and also that of the Roman legionary. In fact, we read that experts are today studying the types of ancient armor which we have in our museums, in an effort to perfect our modern armor.

Wickerwork shields like those of ancient Gaul, have been found in France and large oblong shields of interwoven osier covered with clay were used before Verdun in 1916, as a protection against liquid fire.

There is a distinct similarity between the iron of the Roman pike and the French bayonet in respect to length and the character of the wound which each makes. The spear itself has been used by divisions of cavalry on both sides.

In methods of attack and of defense there are also interesting comparisons.

Cæsar made use of such arrangements as the pluteus, the vinea and the movable towers to protect the workmen, the slingers and the artillery itself. In 1915, before Warsaw, the Germans put into use steel shields which were moved forward for the protection of the trench diggers. The vinea or sapper's hut, Mr. Kelsey says, is a curious parallel to the "one-man tank" designed for hazardous service in front of the lines.

In artillery among all the new inventions, we find the catapult in use again for close trench warfare and the newspaper article which explains its use is headed, "French Go Back Thousands of Years to Find Ideal Trench Weapon."

As a part of his defensive works when he was besieging Alesia, Cæsar made many wolf holes or lilia. These were ditches of conical shape in which sharpened pointed stakes were embedded. In front of these again concealed—beneath the turf, were barbed spikes fixed in pieces of wood. When the companies of the Gauls rushed in to storm the rampart, they trod upon the spikes, then, stumbling into the holes, they impaled themselves on the pointed logs, while heavy pikes were hurled from the towers into the seething multitude.

Precisely such wolf holes have been used in Belgium, near Ypres and in Brussels, where the streets were filled with sunken barrels as a protection against the invading Uhlan cavalry. The dust covered tops were unsuspected until the horses began to break through.

The barbed spikes of Cæsar correspond to the barbed wire entanglements of the present time. For protection such as the barbed wire affords, Cæsar dug ditches five feet deep into which rows of strong boughs were fixed with one end protruding above the ground and with branches turned toward the enemy. In Europe today much timber has been cut for similar purposes.

Cæsar knew, too, about mines and subterranean passageways, and at one time spent twenty-five days in building an immense gallery, only to find that the enemy had dug under his agger and had set fire to the timbers.

The names scattered over Cæsar's pages bring up a thousand memories of the present war—the Matrona river which is the Marne, the Sequana, which is the Seine, the Mosa, the Meuse, the Axona, the Aisne, and the Sabis or Sambre. The Latin names of the Gallic tribes are practically all preserved in the names of modern French cities. Thus the Parisii naturally suggest Paris, the Suessiones Soissons, the Remi Rheims, the Atrebates Arras, the Caleti Calais, the Senones Sens, and so on indefinitely.

Even where the names are no longer familiar the locations recall the presence of Cæsar's legions—Aquileia near modern Trieste where three of Cæsar's legions were in winter quarters, the Remi, who lived around Rheims, Laon and Chalon. Rheims, in fact occupies the site of the ancient capital of the Remi, Noviodunum, the town of the Suessiones which is thought to have been on the hill of Pommiers near the modern city of Soissons. Slightly east of Pommiers on the high ground traces of a Roman camp have been found. Samaro-briva, the city of the Ambiani on the Somme, now Amiens; not far from Mülhausen in Alsace was the place where Cæsar met Ariovistus; the battle with the Nervii was on the heights of Neuf-Mesnil near modern Cambrai, the attack upon the Atuatuci occurred near the modern fortress of Huy, not far from Namur where Cæsar also wintered a legion under Q. Cicero in 54-53 B. C. It was between Coblenz and Andernach that Cæsar crossed the Rhine in 53 B. C. Of this invasion Mr. Holmes says "The sacrifice of life was appalling, but it was made once for all. Thoroughly cowed, the Germans henceforth, ceased to disturb the tranquility of Gaul. Again, Calais, among other ports, claims to be the Portus Ilius from which Cæsar sailed to Britain. At Alise-Ste-Reine, the site of the modern Alesia, is the statue of Vercingetorix, that representative hero of the Gallic nation, extolled even today as the type of uncompromising resistance to invasion and of nobility of soul under crushing defeat.

As a summary of topic twelve why could we not make use of the modern war map, the green cord and the multi-colored tacks to trace the course of Cæsar's marches through Gaul during those memorable years.

The source of the most valuable and the most interesting information about Cicero is, of course, Cicero's own letters. That this material may be available for the use of high school students, it is necessary that the teacher make filing cards for the topics to be used, giving page references to some good translation of Cicero's letters. The results amply repay one for the work involved. Boissier "Cicero and His Friends" has additional splendid studies of Atticus, Octavius, Brutus "that man of thought who had reluctantly become a man of action and who was thrown by the force of events out of his natural element," and of Cæsar in his varied relations with Cicero. Mr. Masefield's "The Tragedy of Pompey, the Great," gives us an unusual conception of Pompey and is worth comparing with that of the Pompey of Cicero's letters.

Mr. David Swing in "The Roman House," has a letter written by Tiro, the slave of Cicero, to a fellow slave, in which he tells much of the interesting home life of Cicero.

Of ancient sources, Sallust's Catiline and Cicero's letters are our authorities about Catiline. Beesley's Catiline is perhaps the most valuable and detailed of later accounts, although all biographers of Cicero devote a chapter or more to this enemy of the state. Mr. Anthony Trollope answers, point by point, Mr. Beesley's arguments in favor of Catiline and makes interesting comparisons with political leaders and demagogues of other ages. Dean Merivale on the other hand has sympathies very near akin to those of Mr. Beesley, while Mommsen, who was certainly biased by no feeling in favor of Cicero, declares that "Catiline was one of the most nefarious men in that nefarious age."

Topics twenty-one to twenty-four might be worked out by reconstructing a series of scenes (mere statements of facts give such dim pictures)—such scenes to show the crowded Forum, its buildings of state, its streets, the hills, rising on all sides, the dress of the people, the men whom one might meet and what they are saying, the rostra, its appearance, whom we might find speaking there, the market places, the Campus Martius with its theaters, the games in the Coliseum, the Capitoline hill with its temples and the Palatine with its homes, such pictures vividly presented would show all the busy daily life of the Romans.

Fourth year Latin is so full of possibilities for supplementary topics that it is difficult to decide which are most important. The interest which centers around the Dardanelles today brings the fortress Troy to the fourground, for Troy, commanding the passage to the Hellespont and closing it to all trade from the West, became the natural meeting place for the trade of the Aegean and of the Euxine and grew rich by taking toll of the industry of others.

Mr. Leaf in "Troy, a Study in Homeric Geography," in one wonderful chapter, reconstructs the scene of the "Fair" at Troy. He shows "the slow merchant ships working gradually up along the coast during May and June when southwesterly breezes may be caught, unloading at Assos and setting the precious burdens on the backs of mules to traverse the rough hill tracks to the plateau under the walls of Troy," staying there to barter their cargoes of wines from Thrace, wools, hides and wheat from the rich plains of Phrygia for the timber, the silver ore and the plentiful store of slaves which the Euxine fleet carried. He pictures the discontent and the mutterings of the Greek leaders at the toll demanded by Priam and their longing to pass through the closed straits of the Hellespont and trade directly with the rich and unknown lands there. "In August the Fair was over and the traders sailed for home. Booths were deserted. Priam and his retainers sat down to feast on the toll they had taken. The "great town" of Troy vanished till next year and the Trojan country folk returned to their villages."

Further interesting acounts of Troy may be found in "Homer and History," by Walter Leaf, "Mycenæan Troy," by Tolman and Scoggin, "Homer's Troy Today," in the National Geographic magazine for May, 1915. Mr. Leaf also gives an interesting account of the subsequent history of Troy, which should be followed by Mr. Masefield's Gallipoli and such modern accounts.

Vergil does not give us very distinct pictures of the women who lived at Troy, but these pictures may all be found elsewhere, richly and sympathetically painted. Helen is best left to her earliest known minstrel, for "who can recapture the grace, the tenderness, the melancholy and the charm of the daughter of Zeus in the Iliad and the Odyssey." Andromache, Hecuba, Cassandra and Polyxena become vivid living characters in the dramas of Euripides and of Seneca. Art and Archeology, Vol. III, Nos. 2 and 5, contain splendid modern representations of Andromache and of Hecuba as they appeared in Euripides' "Trojan Women," when it was played in 1915 in the various stadia of the United States.

The story of another woman, the "Antigone" of Sophocles, emphasizes the depth of the religious conviction concerning the necessity of burial, and thus the heroism of Anchises when he begs Aeneas to go on his way and leave the father to his fate.

For topic twenty-five, it would be interesting to collect pictures of the various gods and goddesses together with information concerning the piece of statuary represented, by whom it was sculptured, where and when it was found and in what museum it is to be seen today.

These are only a few of the possibilities for supplementary topics. No stereotyped set of topics can meet the needs of the individual teacher, who must of necessity be guided in her choice by her own interests and readings. Topics such as these serve, at best, merely as suggestions. Material is at hand in ever increasing abundance and a large amount of it is within the range of the high school student. However, the success attending its use depends in large part upon the knowledge and enthusiasm of the teacher.

Second Year (Cæsar)

1. Composition of the Armies of the Two Republics, Rome and the United States.
2. Comparison of the Officers of These Armies.
3. Clothing and Equipment of the Soldiers.
4. Pay and Provisioning of the Soldiers.
5. Military Standards.
6. Musical Instruments.
7. The Armies on the March.
8. The Armies in Camp.
9. Methods of Attack.
10. Methods of Defense.
11. The Battles on the Marne.
12. Memories of Cæser's Gaul in Modern France; as, the Belgians, the Aisne, Soissons, Rheims, Amiens, etc.
13. Cæsar's Description of Belgium and the Belgæ Compared with Modern Accounts.
14. Ancient Helvetia and Modern Switzerland.
15. The Alps and Their Passes.
16. The Crossing of the Rhine.
17. The Invasion of Britain.
18. Vercingetorix.
19. Cæsar's Motives in Invading Gaul.
20. The Effect of the Conquest of Gaul upon Civilization in General.
21. Military Practices, Parallels Such as: (1) Hostages; (2) Deportation; (3) Slavery.
22. Instances of Individual Bravery.

Third Year (Cicero)

1. Cicero and His Family.
2. Cicero's Town Home and His Country Villas.
3. Cicero's Friends and Contemporaries.
4. Cicero and Tiro.

5. Cicero and His Books.
6. Cicero's Early Education.
7. Cicero's Love for Praise.
8. Cicero's Loyalty to the Republic.
9. Review of Masefield's "Pompey the Great."
10. Illustrations of Cicero's Wit.
11. Cicero's Wealth.
12. Cicero and Catiline.
13. Cicero in Exile.
14. Provincial Government; Cicero as a Governor.
15. Stories about Cicero.
16. Hortensius.
17. Cursus Honorum.
18. Political Parties in Rome.
19. The Democratic Party and Its Leaders.
20. Political Corruption in the Closing Years of the Republic.
21. Rome in Cicero's Time.
22. Roman Boy in Cicero's Time.
23. The Forum in Cicero's Day.
24. The Rostra.
25. Mamertine Prison and the Legends Connected With It.
26. A Stroll in Rome as Described by Horace.
27. Travel in Cicero's Letters.
28. Death of Cicero.

Fourth Year (Vergil)

1. Stories about Vergil.
2. Vergil in His Relations with Augustus.
3. Elements in Vergil that Commended Him to the Early Christian Fathers.
4. Legends Connected with Vergil during the Middle Ages.
5. Vergil in Art.
6. Vergil's Influence upon Tennyson.
7. Troy—Its Location, Walls, Gates, and Towers.
8. Historic Reality of the Trojan War.
9. The Causes of the Trojan War.
10. "The Fair at Troy"—The Ancient Trade Routes and the Cargoes of the Ships.
11. The Subsequent History of Troy.
12. The Dardanelles of Today; Troy and Constantinople.
13. The Aeneas Legends and Vergil's Use of These; His Own Creations.
14. Supernatural Interventions in Vergil's Aeneid.
15. Omens, Oracles, and Portents.
16. The Sibyls in Literature and Art.
17. Visions, Dreams, etc., in the Aeneid.
18. Comparisons of the Pagan Elysium and the Heaven of Dante and Milton.
19. Sacrificial Customs in the Aeneid.
20. Funeral Customs of the Romans.
21. Description of Night in the Aeneid.
22. Ancient Crete.
23. The Journey of Aeneas.
24. Women of the Aeneid: Helen, Andromache, Dido, Hecuba, Cassandra, Polyxena.
25. The Gods and Goddesses of the Aeneid: Jupiter, Juno, Venus, Mars,

Diana, Apollo, Neptune, Minerva.

26. The Laocoon Group.

The last paper of the morning was given by Miss Ada Stewart of Peoria. The committee of which Miss Stewart is chairman, named by the Section "The Library Committee," reported that there were few additions to be made to the lists of books that had been previously given. She introduced a plan for a course of reading in Latin authors by Latin teachers. The course suggested follows:

A Course of Reading in Latin for High School Teachers of Illinois

I. Cæsar: (1) Gallic War, Book VII; or (2) Civil War, Book I; or (3) Civil War Book III.
II. Cicero: (1) Pro Ligario and the Fourteenth Philippic; or (2) Pro Murena; or (3) Pro Roscio and Letters (400 Lines.)
III. Vergil: (1) Eclogues and the First Georgic; or (2) Georgics II and IV; or (3) Aeneid VII and VIII.
IV. Plautus and Terence: Captivi and Phormio.
V. Tacitus. Agricola and Germania.
VI. Pliny, the Younger: Letters, Allen. Oxford Press.
VII. Catullus, Tibullus and Propertius: Selections, Wratislaw and Sutton, Macmillan, $ .60.
VIII. Prose Composition: Baker and Inglis (Macmillan.) Part III, Lessons XXV-XL.

After discussion of the authors suggested, Miss Stewart proposed that teachers should enroll for this course and distributed an enrollment blank which reads as follows:

Enrollment Blank

I wish to enroll for the Latin Reading and promise to read the Course or Courses checked (√) at the average rate of ten lines a day, by June 1, 1919.

Check here	Course	Description
	I 1, 2 or 3	Cæsar
	II 1, 2 or 3	Cicero
	III 1, 2 or 3	Vergil
	IV	Plautus and Terence
	V	Tacitus
	VI	Pliny, the Younger
	VII	Catullus, Tibullus and Propertius
	VIII	Prose Composition

Name.....

Address.....

Reports to be checked here when received.

February	April	June 1

This blank should be given or mailed to

ADA STEWART,
116 High Street,
Peoria, Illinois.

The movement here initiated seemed to the Section to have in it great possibilities and was received with hearty approval. The suggestions of the paper were approved and the committee called for by the plan proposed was authorized. Miss Stewart's paper in full here follows:

Report to the Library Committee

To the Library Committee was entrusted the task of working out a plan for Latin reading by high school teachers. The problem naturally divides itself into two parts: the preparation of a course of reading and the administration of the details arising in putting the plan into operation.

After considering several possibilities the committee submits to your consideration for use this year the course which is before you. The committee does not claim credit for originating the general plan of the course, and here acknowledges indebtedness to "The Classical Reading League of New York State." The course of study presented to you is a modification of theirs. In preparing it we had in mind both those who may wish to add to their reading of Cæsar, Cicero, and Vergil and those who may find classics not read in high schools better adapted to their needs and desires. For those teachers fortunate enough to have covered all the literature here suggested, substitutions may easily be arranged.

Except in two or three instances editions have not been recommended as in the case of Cæsar, Cicero, and Vergil so many editions are easily available to a teacher, and ample information is given regarding texts in the article by Professor Canter on page 131 of "The Proceedings of the high School Conference for November, 1917," also in the article by Mason D. Gray in "The Classical Reading League of New York State" in "The Classical Journal" for November, 1917.

It is recommended that the reading be done at the average rate of ten lines a day. An effort was made to have the courses somewhat uniform in length although it is obvious that such uniformity can be only approximate. All of the courses are of moderate length so that at the average rate of ten lines a day it is not making too great a demand on a teacher's leisure. Should any find one course too little in amount, the remedy is simple. Read two or three.

On the administrative side several problems confront us. It is not enough for the Conference merely to suggest a course of reading. Many annually begin ambitiously and with good intentions but under the pressure of other duties do not finish what they have begun—therefore, in order to make the work successful, the committee again acknowledging indebtedness to the New York League, suggests that enrollment blanks be used and that reports be made to the address on the blank, on the first of February, April and June. Such reports should consist of a statement that the work of each two months has been done and should show how much ground has been covered. It is further recommended that the names of those who have completed the work undertaken should be published each year in the proceedings of the Classics Section.

If the Latin teachers of the State who do not attend the Conference are to be reached and interested, it will be necessary to secure their enrollment through circulars and correspondence. There will also probably be need of correspondence with those who enroll now. In short if the movement is to grow it will need to be financed to some extent and in some way.

To carry on the work and to manage the details we recommend that a committee of five be appointed, two representing college and three high school interests, and that they report at the next annual meeting of the Conference, on the progress made during the year.

The committee urges the earnest cooperation of all in assisting to make the movement successful by enrolling in one or more courses and by interesting others who are not present, to the end that the literary horizon of Latin teachers may be widened, and the course of Latin may be directly and indirectly benefited.

The Section also authorized the Executive Committee to appoint a committee to study the questions raised by Miss Warner's paper on Latin Prose and directed that it report at the next meeting of the Section.

The Section then adjourned to meet in the afternoon with the joint session of the language groups.

MIMA A. MAXEY, *Secretary.*

5. COMMERCIAL SECTION

The morning session of the Commercial Section began at 9 o'clock with I. L. Rogers of Waukegan, presiding. After the general routine of regular conference announcements and a brief word of greeting directed especially to the new members, the chair introduced the first speaker of the morning, Dr. Edward Amherst Ott, president of the Educational Extension Service. Dr. Ott has for over twenty-five years lectured in every state, published a number of important articles and books bringing out the ideas and ideals of practical education. His talk follows:

Commercial Teachers' Opportunities in Education

By EDWARD AMHERST OTT, President
Educational Extension Service

There is a double foundation for beginning my address today with congratulations. I have the right to congratulate you as individuals because you have chosen the commercial side of education as your profession and for a deeper reason I wish to congratulate the schools of America on the broadening of the courses of study to include commercial education involving as it does in the broader use of the term, Industrial and Vocational Education.

The reason for congratulating you rests on the fact that you are teaching a subject that necessitates perpetual mental alertness. There is no finished science of business to be learned and passed down to other people. Commerce is as plastic as human life and each day brings to your department new facts, new interests and new applications of old lessons. The individual teacher who is self satisfied would find little satisfaction in the commercial department. Commerce in its widest sense reflects all the unfolding activity of the race and any fact that affects the price of a commodity, the method of handling it, or cheapens the cost of producing it is material for your classroom. You have, therefore, not only the privilege of mental alertness but the necessity for it. One new element in business may disorganize and compel reorganization of many processes, plans and methods.

With only twenty-four letters in the alphabet the human race has been able to invent all the words in all the dictionaries. Perhaps language is ornamental enough, but just think of the dimensions of the dictionary if one more letter should find its way into the alphabet. Think of the tens of thousands of new combinations that could be made. In the vocabulary of business each day may add new words which, in combination with others, will add interest and stimulation to you and your students. There is a temptation for the professional

teacher to feel that he knows his subject; that he has mastered it and can teach it to his pupils. This feeling will, I am sure, never prevail in the Department of Commerce for the very fact that you are in touch with an ever changing series of facts.

In the humble matter of writing letters you would feel that a standardized form of letters would be adopted and taught to the stenographers in all business houses and yet such is not the case. The rhetorics tell us how to write a letter, but in the realm of commerce the advertising expert tells us that standardization spells death. Recently my attention was called to a letter in which the form of address had been so changed that the unexpected was used in the address; in other words, a fact, instead of a name. Thousands of copies of that letter were sent out with an immediate increase of business into the thousands of dollars. Now this fact is not only interesting but vital. It stimulates the inventive genius and the effort to duplicate effects of this kind make the game of business as dramatic and romantic as it is vital.

I congratulate you, therefore, on the fact that you are to avoid the usual monotony of teaching. Your work can never become stereotyped or finished. It will remain as stimulating and exhilarating as it is practical. In your room you will feel the pulse beat of the world. Every invention, every device, every great social and political happening will echo in your classroom and modify your teaching and because of these varied advantages to you I have the right to congratulate the educational world and especially the teachers in other subjects on your advent.

The schools have needed a correlation with life and life's activities for many reasons. The criticisms of impracticability, of aloofness and isolation that have been so frequently hurled at the educator have had much foundation in fact but now that the universities are in touch with the farm and factory and store and home and touch life at the point of normal activities, the interest of practical men will be intensified and the schools receive the attention and support which they have so sadly needed in the past.

It is very easy to convince one's self that the subject to which one gives one's life in the educational world is of vital importance to others and to the race, and relative values are lost. You have brought into the educational world some new letters for the alphabet or at least some new words for the vocabulary. You may not ornament the curriculum but you will at least enliven it. Just what rank you are to have in the scholarship view of things does not matter at this time. It does matter that you lift the nation above commercial illiteracy.

Of course you realize that there are many kinds of illiterates. A man may live in a good atmosphere all his life and be an architectural illiterate; artistic values may have no meaning. Living in the atmosphere of the classroom a man may be a dramatic illiterate incapable of dramatizing his own life successfully on the stage of competition. We have highly educated men who are ethical illiterates; who do not comprehend their duties to their families and themselves even in the element of insisting on their own financial rights. It is unnecessary to call your attention to the fact that America is a nation of art illiterates. We hang the most impossible pictures even in educational halls. It behooves the teacher in the lines of commerce to lift the nation above industrial illiteracy. To, at least, teach the man on the street corner that the way to make himself and the world prosperous is not to go on a strike or smash windows; to know the difference between a real loss and an exchange in money. I know of no group of men who are in such grave danger of illiteracy in the sense here described as the men who devote their time to the study of one subject in isolated concentration.

The same reasons that give me the right to congratulate you on the field you occupy also gives me the right to speak to you concerning your obligations because of the privileges you enjoy. As I conceive your relations to the schools and to your profession, aside from your classroom work, I feel that you are called for professional and patriotic reasons to become the leaders in selling education to the people of the United States.

America's Shame

The treatment of the schools and teachers of America is the outstanding shame of America. Rich as this country is, it has pauperized itself and its schools by seeking good service with a laurel wreath of praise and limited pensions instead of adequate rewards and independence on the part of its educators. I need not here make the usual comparisons, showing the disgraceful inadequacy of compensation. The plumber and the painter and the carpenter have sold their interests to the nation successfully and are more nearly rewarded for their services than are the teachers of the schools of the Republic.

Here is your morning paper; we will turn the pages to see how much space is devoted to education. Here is a quarter of a page devoted to a cigarette but not a line devoted to the great State University of Illinois. Here is an allotment of expensive space for chewing gum; here a quarter of a column to an actress, but not a line about your humble school teacher in a rural school saving the state from illiteracy and ignorance. I feel that the life and energy and enthusiasms of the Department of Commerce in every school should be utilized to stimulate the school as a unit and to organize the educators of America and to stimulate in them a professional pride that would lead them to demand in the open field of publicity that education be lifted above the low water mark of pauperization to the full flood of dignified prosperity.

The Educated Group Should Lead

If education is really what it claims to be then educational groups should lead in our national advance. Naturally, this expression is of value only as we express it in definite detail. I believe that the schools of America should be sold to America and by assuming the position of leadership the first step into the publicity limelight is taken. In the community where the school is located the school should set the example in everything that comes in the normal activity of the school. If the school presents a moving picture it should be done better than at the "movie house." A little cheap lantern should not be used but a better lantern than the one downtown. The pictures should be better chosen, the room be better ventilated, be made more comfortable, and in all the endless details that make up a successful public event the standard should be in the school and not the outside event. In matters of office routine and business form the school should lead in the field of local institutions. The boy from the high school should go to the bank with business habits gained in an atmosphere that is as efficient at least as the methods at the bank. In matters of public events and community enterprises the school should set the example.

It is needless to say that the teacher himself should be a leader in all community activities and he should be paid enough money so that he could dress as well, live as well and save as much money as men engaged in any other self sustaining pursuit.

If the larger activities are to come to either the schools or the individual teacher of America, those of the profession who are interested as you are in commercial education have a great responsibility in hastening the day. You can stimulate interest, first within the group, then among all teachers and then plan the selling of educational interests and professional needs to the great American public which never fails to perform a social justice when it is once apprized of its duty.

Dr. Ott's talk was followed by a very interesting general discussion. Various points of his talk were enlarged upon, resulting in establishing a number of permanent topics for extended thought and discussion. Following are a few of them:

1. What amount of continuation work should be provided for in the Commercial Course?

2. How may a practical teacher best serve his community thru his school activities?
3. What is a practical course and what is the test?
4. Would it not be well to have a representative committee of College, High School, Business Men and Social Leaders formulate a working definition for a practical course so that the average educator would have a measuring unit whereby he may compute and estimate the value of his efforts to the general public?
5. Could we not inject somewhere in our courses more training in Human Nature, Personal Respect, Courtesy and appreciation of good breeding in business circles?

It was unanimously agreed that any one of these points were vital enough for a whole topic at a future meeting and that all live teachers would keep them in mind during the following year; each teacher returning next year with reports of practical experience bearing on one of these topics.

Dean N. A. Weston entered the session at the close of the discussion and extended a very cordial welcome to the members and visitors. He made it clear that the closest cooperation between the High Schools and the State Universities was the one necessity in getting desired results. "This is the High Schools' Conference, not the Universities', but I, and in fact the entire faculty of my department, are anxious to help in any way we can to make your conference a success." This was not only stated by the dean but Professors Robinson, Scovill and Litman exemplified it by ably assisting in discussions and presentation of helpful suggestions in courses of study.

Mr. L. D. H. Weld, who has charge of the educational research work for Swift & Company, unable to be present, sent his paper to the Chairman. His paper was very ably presented by Principal Morse of Harrison High School, Chicago. Mr. Weld's paper follows:

Correlating Education With Business

By L. D. H. Weld

Manager Commercial Research Department, Swift & Company, Chicago
Formerly Professor of Business Administration, Yale University

If it does not seem too presumptuous, I should like to suggest that, judging from my own personal experience, a good way to correlate education with business is to study economics, become a professor of economics and business administration, and then go into the packing business for a few years! It seems as though this ought to give the proper combination of economics and practical business experience to fit one to become an efficient teacher of business subjects. The only trouble is that after this experience, one is not likely to go back to teaching.

For teachers of business who can not follow out the program suggested above, it is necessary to find some other method of getting the business man's point of view and of coupling up practical business knowledge with the teaching of business subjects.

I am not particularly familiar with what is being done in the high schools of the country today in order to properly train that great majority of students

who do not go to college, but who enter business direct from high school. From what I do know of the situation, it is my feeling that there are three principal weaknesses in connection with the teaching of business subjects. These are, first, that many teachers have had too little contact with real business to make their instruction as useful as it might be; second, that the students do not have sufficient opportunity to come in contact with business life, so as to appreciate the real significance of what they are being taught; and third, that the courses given are not built up sufficiently on a foundation of economics and business fundamentals.

As for the first weakness, there are of course many teachers who have had practical experience, and they have a distinct advantage over the others. There are various ways of overcoming a lack of such experience. Vacations may be used profitably—both mentally and financially—by getting a job in a bank, in a retail store, in a factory. Friendships should be made with business men, and current business problems should be frequently discussed.

Before I left academic work and went into business, I got "business experience" through contact with business men. I made many studies of market organization and selling methods—not by retreating into the library, but by going into business offices and asking all sorts of intimate questions about selling methods and costs.

Not but what there is enough helpful reading matter to spend one's time on. But the most helpful kind of literature for the teacher of business courses is found in the daily newspapers, in financial journals, and in the trade papers. The New York Journal of Commerce, for example, is perhaps the most valuable single publication in the country for the student and teacher of business problems.

The teacher of business subjects must be up to date; he must follow current happenings; he must know the latest developments in the field of business which he covers in his courses; he must know how this business has been affected by the war; how it will probably be affected by reconstruction policies; and what the principal reconstruction problems are.

And this brings us to the second weakness—the need of having students come in contact with business life. This defect can also be overcome in various ways. The most valuable method is, of course, to have students do some actual work for business houses,—during vacations or on Saturday afternoons and evenings.

Then there is the possibility of taking students on visits to factories, large retail stores, wholesale houses, etc. When I was teaching at Yale, I used to take groups of students to New York to go through such houses as the National Biscuit Company, Claflin & Company (a wholesale dry goods house), American Woolen Company offices, Bush Terminal (an enormous group of wharves and warehouses, where scores of raw materials from all parts of the world could be seen), Austin, Nichols & Company (the largest wholesale grocers in the United States), etc.

Such concerns are not available to most of you, but there are interesting factories and business houses at least in towns and cities not far distant, and those of you who are not too far from Chicago or St. Louis have some of the most interesting and instructive business houses and industries within reach. Even if students can not be taken to such places, you teachers yourselves ought to visit them whenever you can.

If any of you come to Chicago, I shall be glad to have you visit the Stock Yards and Swift & Company's plant. During the war, the Government has not allowed visitors in the packing plants; but these restrictions will undoubtedly be removed before long, and I shall be glad to arrange to have a competent guide take you through our plant, whether you come alone, or with groups of students.

There is another way in which the teacher may make his courses more vital and interesting to his students, and that is by continually linking up the subject matter of the courses with every-day happenings in the business world. Give life to your teachings by drawing examples and illustrations from the

experiences of businesses or corporations, as you hear of them through local business men, or as you see them recorded in the newspapers or trade journals. When you give a problem in business arithmetic, for example, have the students get their figures from the market pages of the daily papers. Or get the record of specific transactions from a local bank. Use as many homely and every-day illustrations as you can, thereby making your students realize the practical application to and vital connection with the every-day business life of your community and of the nation.

One other way in which to bring your students in contact with business life is to have business men come to the classroom and give talks on business problems, or descriptions of industrial processes. Whenever you do this, plan carefully beforehand with the business men you invite, so that they will develop the point of view that will be most interesting and instructive to your students, and so that they won't talk over their heads.

This brings us to the last weakness,—the fact that business courses are not built up sufficiently on a foundation of economics and business fundamentals. Business courses are apt to be rather technical, and their relation to certain important fundamentals is frequently lost sight of.

Numerous attempts to supply this deficiency have been made by giving courses in economics, and several elementary text books have been written for use in such courses. On the whole, I feel that attempts to teach economics have not been particularly successful: first, because the text books themselves have not been well adapted for the purpose in view; and second, because the teachers have not had a sufficient knowledge, either practical or theoretical, to teach the subject in an interesting manner.

A text book on economics, designed for high school students should be primarily a book on industrial and business economics. It should have practically nothing to say about the "marginal utility theory of value," or the "Ricardian theory of rent." Rather should it be a description of industrial and mercantile organization, bringing in fundamental principles of economics, such as the law of supply and demand, the principle of division of labor, etc., as phases of the market places, and of the industries that are described.

I believe that such a book can be—and will be—written before long, and that it will be of great benefit in giving high school students a conception of some of the fundamental business and economic problems of the nation.

It will describe the principal industries of the country, telling of their locations, the kind and source of raw materials, the economies achieved through division of labor and large-scale production, the principal industrial processes, etc. Such descriptions will gradually unfold the vital features of the labor problem, the trust problem, the railroad problem,—but in an unobtrusive and practical way.

There is an ever-growing need of clear thinking on economic problems, and it is the duty of business teachers to supply at least a sane point of view to their many students who never go to college. It is the only chance that such students ever have for getting a sound foundation of knowledge that they need in order to become good citizens and voters, as well as able business men.

Popular misconception of fundamental business problems has played havoc with the organization of industrial society in some countries,—as for example in Bolshevist Russia. The value of wealth accumulation should be taught; the fact that such wealth accumulation results in big, efficient, business units, and that earnings are reinvested in industrial enterprises should be impressed on our people. At the same time, it can be pointed out that such wealth accumulation is of value, only when it comes about honestly, and in free competition, and only when employees are paid fair wages and are given decent working conditions.

The Non-Partisan League furor of the Northwest is a good example of the dangerous results of misconception of business fundamentals. This whole

movement is based on the economic fallacy that middlemen in business are dishonest and unnecessary, and that the whole selling organization for getting goods from farmer to consumer is wasteful and cumbersome.

This is a phase of business economics that has been neglected even in our colleges and in our general text books on economics. It has not been generally realized that the splitting up of the marketing process among successive middlemen is merely an example of economic specialization, or division of labor, such as we praise in the manufacturing processes. The same man who recognizes the advantages of having one factory spin cotton yarn, and another weave the yarn into cloth, turns around and says that the wholesaler in distribution is unnecessary, and that goods ought to be sold direct to retailers, or even to consumers. Little does he realize that there are expensive services that have to be performed in marketing, just as in manufacturing, and that the present middleman system has developed simply for the reason that it results in economies that would otherwise not be possible.

Some methods also ought to be devised to give students a better idea of the economic laws governing market prices. In my own industry, for example, there is a widespread feeling that the prices of live stock and meats are in some way arbitrarily controlled by the packers. If the large packers worked together under secret agreements, they might be able to exercise some control over prices. But they do not work together in any way; if there were any such illegitimate control, I would not think of being identified with one of them for a minute.

The prices of live stock depend on natural forces,—the supply of animals on the one hand, and the demand for meat on the other. It is not generally realized that the demand for meat fluctuates from week to week and from day to day, just as the receipts of live stock vary. Sometimes the demand for meat falls off as live stock receipts increase; the result is an inevitable drop in prices. Sometimes the demand for meat increases as the supply of live stock falls off; the result is an inevitable increase in prices. Between these two fluctuating forces the packer stands, buying the animals, slaughtering and dressing them, sending them in refrigerator cars to all parts of the country, maintaining branch houses in all principal cities, and even delivering meats to the retailer,—and he has to wage a continuous fight of efficiency to make his returns exceed his expenses. As it is, the packer's profit is only a fraction of a cent per pound of meat handled,—a profit too small to have any noticeable effect on prices.

Because of the misunderstanding of these things, Swift & Company has had to undertake an educational or institutional advertising campaign. It is dangerous not only to the industry, but also to stock raisers and consumers, to allow the popular prejudice to continue, and we have been practically forced to adopt this method of giving the public correct information. If our high school students were taught more of the fundamentals of business, this would at least help to overcome the Bolshevist tendencies that arise from ignorance of this subject.

Some of the principal problems facing the country today are the extent to which the Government shall continue war-time control of industry, and the development of healthy relations between employer and employee. These are primarily economic problems, and it is the duty of you teachers, who come in contact with the future business men of the country, to make at least some attempt to inculcate in the minds of your students a knowledge of business and economic fundamentals.

After a number of interesting discussions upon the practicality of some of the suggestions, especially advice which has a tendency to make the teaching profession less a profession and more of a stepping stone to a profession, the meeting was adjourned until 2 o'clock.

The theme for the afternoon meeting was discussion of courses of study.

Prof. A. T. Scoville of the University of Illinois, presented a paper on bookkeeping and commercial arithmetic. In this paper it was brought out that there is a greater need for commercial arithmetic in the average office than for bookkeeping; that therefore bookkeeping could best be presented in the Junior and Senior years of the high school. Should the student leave school before that time, he would have a knowledge of commercial arithmetic which would fill his most immediate needs. Professor Scovill also stated that the present syllabus for commercial arithmetic was prepared by the Department of Mathematics of the University of Illinois.

Bookkeeping and Arithmetic

A. T. Scoville, University of Illinois

To find the number of bushels of shelled corn in a full crib multiply the length of the crib in feet by the width in feet; then multiply this result by the height in feet and divide by 1.244.

To find the number of gallons of water in a cylindrical tank or cistern, multiply the diameter of the tank or cistern in feet by the diameter; multiply this result by the depth of the water in feet, and this result by 5.874.

To find the number of acres in a rectangular field, multiply the length of the field in rods by the width of the field in rods, and divide by 160.

These are some of the rules that are given to the farmer in various handbooks and other miscellaneous pamphlets. Other similar rules might be quoted to indicate the extent to which it is considered necessary to assist the farmer or others interested in solving simple problems in arithmetic.

The farmer's son goes to school and learns that there are 231 cubic inches in a gallon of water, 160 square rods in an acre and that a bushel of shelled corn contains 1.244 cubic feet. Accordingly he knows why the use of these amounts in the calculations gives the correct results. Knowing the fundamental tables of measures and weights he is able to perform many practical calculations without the use of rules that seem more or less uncanny. We say "uncanny" because it must seem to the person using such rules that the amounts 1.244, 160, 231 or others similarly used are magic figures which bring the desired results, merely because some patron saint has decreed that they should.

A published rule for calculating interest reads, "To find the interest on a given amount for 60 days at 6% write the amount and point off two places." To one absolutely ignorant of the methods of figuring interest such a rule is easy to put into practice, but if the rate and time in a case arising, happen to be different from those stated in the rule, one relying entirely on the rule is unable to make the necessary calculations.

We do not imply from the foregoing statements that one should not use a well established rule when it is possible thereby to avoid lengthy calculations. The banker is justified in using short-cut methods in calculating interest. Even a mathematician would be justified in using short-cut methods in calculating the number of gallons in a tank or number of bushels of corn in a crib. We do imply, however, that the rules thus formulated should not take the place of fundamental principles underlying these rules when we teach arithmetic. They may be derived from fundamentals. Likewise, the short-cut methods of triangulation used by aviators and gunners in determining locations or distances are perfectly proper. In teaching trigonometry, however, the fundamental principles must be taught first, after which the short-cut methods of applying them might be developed. One is better able to meet peculiar and unexpected calculations if he knows the origin of the amounts involved in the short-cuts than if he is limited to the short-cut rule as stated without knowing anything of its

derivation. The preservation and growth of science demands that short-cuts be taught only as derivations from the established principles.

The surveyor applies the principles of trigonometry and calculus but nearly loses sight of many of the principles and relationships existing among the trigonometric functions, differentials or integrals. The constructing engineer uses the principles of calculus, but in the disguised form in which his calculations of stresses and shears are made he often overlooks the origin of the constants or variables which he uses. Nevertheless, it is considered that the modern surveyor and constructing engineer should study the principles of trigonometry and calculus so that they may be more resourceful in meeting unusual conditions which might not fit into the specific formulas at hand.

Bookkeeping is founded on principles of accounting. Some bookkeepers can keep books without knowing even some of the most elementary principles. Hundreds of instances can be found in large industrial or manufacturing concerns in which a so-called bookkeeper makes entries in a voucher record, in a columnar sales book, in a stores ledger, stock ledger, in a check register, or even in a customers' ledger without having any knowledge of the principles of accounting beyond the ones that might require entries to be made in accordance with the documents used. In many of the large banks, a so-called bookkeeper enters out of town checks or city checks in depositors' accounts. All entries being of the same character, no knowledge of the principles of accounting is required. One does not even have to know the meaning of debit or credit. Nevertheless, the routine bookkeeper of the large industrial concern or bank is looked upon by the average person as an expert bookkeeper or accountant merely because he has been a so-called bookkeeper on the staff of a million dollar concern.

The question might well be asked, "Should all bookkeepers be expected to study accounting just as all modern surveyors and constructing engineers are expected to study trigonometry or calculus?" The answer to this question depends very largely upon the meaning of the word bookkeeper. It seems that the young man listing checks all day long, or making entries in a stores ledger from invoices or requisitions or doing other similar routine work should not be required to have a knowledge of accounting principles any more than a man running a riveting machine in the construction of a steel building should have a knowledge of calculus. True, if the riveter expects to become an engineer in charge of the job he would stand a better show of getting the place if he had learned the principles of trigonometry, calculus and some of the other subjects usually allied with them. It is likewise true that the young man doing routine work called bookkeeping would stand a better show of becoming head bookkeeper, chief accountant or auditor of the business if he had a knowledge of accounting and some of its allied subjects.

Is it expecting too much to presume that all so-called bookkeepers in all business houses should have a knowledge of accounting principles before they take up their work? Is is expecting too much to even imply that all men assisting in the placing of steel girders in a bridge or building should have a knowledge of stresses and shears as calculated from the principles taught in calculus; or is it expecting too much to imply that all rodmen or others assisting in surveying should have studied trigonometry?

Is it not the loose and unrestricted use of the word bookkeeper that has caused so many people to think that a subject called bookkeeping is the only preparation for office work involving writing and the making of figures? There are comparatively few office employees engaged in writing and figuring who have not taken some sort of a course in bookkeeping. This statement may seem somewhat at variance with one made a moment ago to the effect that hundreds of so-called bookkeepers do not have a knowledge of accounting principles. The two statements are easily reconciled by the fact that one may study bookkeeping without absorbing for future use any of the fundamental principles of accounting. I have seen numerous instances of this sort in which

young men and women would complete a bookkeeping course in a business college or high school, or even in a college or university, and carry away practically no working knowledge of the accounting principles involved.

This statement may seem rather harsh and uncharitable toward those who have conducted the courses. It is not so uncharitable, however, when one considers that practically the same statement could be made concerning algebra, trigonometry, calculus, Latin and probably other courses. It is not until one studies trigonometry or analytical geometry that he really understands the application of many algebraic principles. Similarly, one does not realize the significance of the trigonometric functions and formulas until he applies them in analytical geometry and calculus.

Continuing the comparison of bookkeeping and accounting with the courses in mathematics it might be said that one does not find himself capable of understanding and applying the principles of accounting as found in a bookkeeping course until he has supplemented such a course with some additional advanced study involving accountancy. Likewise, I feel personally that the real importance of commercial arithmetic is not grasped by the average student until he has had an opportunity to apply it in bookkeeping.

This being the case, then it seems that business arithmetic should precede bookkeeping and that at least one semester's work in bookkeeping would be necessary to cause one to apply adequately his knowledge of arithmetic. Being thus able to apply his business arithmetic the student should now be able to fill one of the clerical positions in the large concerns, which we have previously designated as "so-called bookkeeping positions." Thus he has studied some bookkeeping largely to assist him in using his arithmetic in a business way. If he is to become a real bookkeeper in the business, he must acquire a greater knowledge of its principles through a further study of bookkeeping and accounting. By studying these subjects for two years, one ought to be able to acquire quite well the principles that would enable him to put into practice what he learned during the first year or possibly the first year and a half. His subsequent study and experience would thus supplement his second year of study so as to permit of his successfully and intelligently applying some of the more advanced principles.

These statements are equivalent to saying that the average routine clerk (so called bookkeeper) applies only the principles of business arithmetic in his work. This is true in the majority of cases. In fact, if a young person is to leave high school to accept a position in an office, he will usually succeed better at first if he has had one semester or one year of business arithmetic than if he has spent the same length of time in the study of bookkeeping without the arithmetic. In the larger offices, most of the work consists of listing, averaging, and making calculations of various sorts, rather than of doing any work requiring a knowledge of bookkeeping in the true sense.

This condition is nicely stated by Mr. Wallace E. Bartholomew, Specialist in Commercial Education of the New York State Department of Education in his pamphlet, "Fundamental Aims in the Teaching of Bookkeeping." After pointing out that only a very small number of the bookkeeping force of the modern large business office are required to apply fundamental principles of bookkeeping, he states that "While the bookkeeper in charge of the small office needs to have a fairly comprehensive knowledge of bookkeeping principles and practice and of business procedure, the clerk in the larger office has very little occasion to apply even the elementary principles of bookkeeping. He needs rather the ability to make simple entries, to sort and tabulate accurately the data collected on record slips and to recapitulate totals, to verify and check carefully, and the like; moreover, he should be able to do all of these things with facility and dispatch."

The facts as quoted above from Mr. Bartholomew are of considerable importance when one studies them in connection with the dual purpose of a high school bookkeeping course. This dual purpose, as most of us doubtless

know, consists in teaching bookkeeping in such a way and at such a time in the curriculum that the student may get into business as soon as possible; or that he may apply it as credit toward meeting entrance requirements in the colleges and universities. These two purposes need not cause a difference in the methods and time of teaching but they sometimes do. Attempts are made to put bookkeeping early in the curriculum so that the student may get into some office work if he leaves high school at the close of the second or third year. The pressure brought to bear in some localities for so called practical work, sometimes causes the teacher to place more stress on the completion of a certain amount of work, the writing up of a maximum number of bookkeeping sets; and less stress on the learning of the fundamental principles.

The dual purpose of bookkeeping courses in high school need not exist if the school boards can be impressed with the facts as stated above. By placing business arithmetic in the second year, and bookkeeping in the third and fourth years; or in the second and third, or second and fourth, those who wish to leave at the close of the second year will have the knowledge of business arithmetic which has been designated as more important than bookkeeping for the young clerk entering a business office. Those who leave at the end of the third year will have the arithmetic augmented by at least one year of bookkeeping. Those who complete the four year high school course will have had one year of business arithmetic and two years of bookkeeping. These two years of bookkeeping under such conditions ought to be of the type which would teach the correct principles as well as the methods of recording, ruling, posting, and so on. They would then be serving the two purposes to the best advantage. The student would be fairly well trained for a bookkeeping position as well as a clerical one. He would also be prepared to take up college or university accounting work in advance of their elementary courses.

At the meeting of the commercial section of this conference a year ago, it was voted to have committees appointed to revise the syllabi presented in 1916. As a member of the committee chosen to revise the bookkeeping and business arithmetic syllabi, I can but report that as far as bookkeeping is concerned, your committee thinks no marked revision is necessary. It is the sense of the committee that the general content of the course can not be changed much under existing conditions. Likewise the order in which various subjects are presented cannot be altered materially without discriminating against some of the good text books; or without causing the teacher to make radical changes in the teaching procedure.

There are two suggestions we should like to make concerning the bookkeeping work in Illinois high schools. The first one is that bookkeeping should require business arithmetic as a prerequisite or as a concurrent course. The second is that the teachers should not be so self-satisfied with their preparation for teaching bookkeeping as they have been in the past.

The reason for the first suggestion is obvious to most teachers of bookkeeping who have had to spend a great amount of unnecessary time in teaching business arithmetic to bookkeeping students who had not previously taken it. The reason for the second suggestion is that the welfare of the present teaching force requires it as does the welfare of the student and the business world.

Bookkeeping teachers have been scarce because of competition in other lines. They are scarce today. They get better pay than the average of other high school teachers of similar age and teaching experience. According to the economic law of supply and demand it does not seem that such a condition can exist much longer. With institutions like the University of Illinois having from five hundred to eight hundred students enrolled in its accounting courses at one time with no indication of an immediate reduction, and with similar, though somewhat smaller enrollments, at most of the other uni-

versities and many colleges, it seems that the demand would be met within a few years. It is then that some of the teachers now in the harness will appreciate the value of preparedness.

It is considered undesirable to alter the syllabus materially at this time, largely because the average teacher is inclined to follow the text book without modification. A syllabus cannot be made to be adapted to all of the modern bookkeeping texts, without becoming a burdensome document. A syllabus could be prepared requiring a specific method of approach, a specific order in taking up the study of various accounts and transactions, a specific method of closing, of preparing statements and other essentials, but there seems to be no necessity of favoring any one of the several good text books and outfits in use to the disadvantage of the others. There are several about on the par with one another as far as the presentation of correct principles is concerned. Some, however, proceed on the assumption that everything must be presented to the student in only one way, while others seem to recognize the policy of leading up to the correct practical way by a series of logical steps. Any one of these books could be made to give excellent results with proper guidance by the teacher.

It is quite apparent that, if a student needs a second year of bookkeeping in order to assist him in mastering the principles of the first year, that a teacher should need at least three years to assist in mastering the principles of the second year work even as good as the good student would master it. To be capable of teaching properly then, should not the teacher have at least four years of bookkeeping and accounting?

Would a teacher of high school mathematics be employed in the average four-year school without having had one year of mathematics (algebra) in in the eighth grade, two or three in high school, and at least two in college, or a minimum total of five or six years? Would a language teacher be considered capable without having had at least four or five years of high school and college work in the languages taught? Furthermore, would a school board of a good high school employ a teacher for first and second year Latin who had gone no further than Cæsar, or even Cicero?

However, there is no doubt that instructors are retained in bookkeeping for first and second year work who have had little more than a two years' course in a high school or college. Are such teachers able to expand on the material in the texts and explain why everything is done as prescribed? Are they able to present various whys and wherefores for everything? To this extent teachers of bookkeeping are confronted with a more difficult proposition than are those of language and equally as difficult as those of mathematics.

To meet these situations, teachers should prepare themselves by a study of the higher principles and philosophy of accounting. The preparation for teaching is not the same as for a C. P. A. examination. Solving advanced problems does not prepare for teaching first and second year bookkeeping nearly as well as does the study of such books as Sprague's Philosophy of Accounts, Bentley's Science of Accounts, Hatfield's Modern Accounting, Cole's Accounts, or some of the more practically theoretical books as Esquerre, Wildman, Gilman, or Dickinson.

There is a reason for everything in bookkeeping and accounting. The text book cannot take up the necessary space to expound the reasons, nor discuss each step in the various procedures. A great amount of such work could be done profitably by the teacher. Where several steps are taken for pedagogical purposes, in deriving the usual correct way of doing something in practice, the teacher should point out specifically how the successive steps are merely a development and how the resultant is the way that is usually practiced.

The numerous difficult questions that arise in teaching bookkeeping cannot be discussed at this time. There were twenty questions presented at the round table discussion last year which should be kept before us constantly for consideration. An exchange of ideas on these and similar topics should prove of in-

estimable value to the development and standardization of bookkeeping instruction. The questions presented were as follows:

Topics for Discussion

"1. Do you begin the study of bookkeeping with the account? If so, how do you proceed?

"Do you begin your work with the study of the Balance Sheet, and if so, how do you proceed?

"How is the time divided between class-discussion and laboratory work?

"2. How much time do you devote to the study of business papers? When should it begin? How long should it continue?

"How do you avoid waste of time in the laboratory where the papers are used? Can you secure neatness without a great amount of repetition?

"3. When do you introduce columnar cash books? To what extent do you introduce them and how?

"4. Do your pupils find difficulty in mastering the Cash Book, Sales Book, and the Purchase Book? Do you present them in the same set or one at a time in separate short sets?

"Do you approve of introducing a number of specially ruled Sales, Purchase and Cash Books? Why?

"5. Do you teach single entry bookkeeping in the first year? If so, in what part of the course do you place it?

"6. Show how you teach the three party draft without confusing the student in bookkeeping? Should he be required to make the entries on the books of all parties in beginning work?

"Do you teach all the accounting of all common forms of negotiable paper at one time, or do you introduce it incidentally and part at a time while studying other principles? When would you introduce such work if you did take up the study of all of it at one time? Would you use short exercises, including other transactions of short exercises, excluding everything else?

"7. How do you introduce such items as Cash Discount, Interest and Discount, etc?

"Have you ever taught the 'penalty theory' of discount to first year students? How?

"8. When do you introduce the closing of accounts by journal entries?

"9. How do you explain to beginners the reasons for debiting and crediting in accounts when you close one account into another, such as Profit and Loss into Capital, Expense into Profit and Loss, etc.?

"10. How do you get the student to grasp the idea of the unity in the ledger?

"11. Do you use a classification of accounts for first year students? If so, what terms do you use in classifying them?

"12. How do you explain the theory of debit and credit to the first year students? Or do you simply teach them a 'giving and receiving' credit and debit rule?

"13. When do you differentiate the different Trading accounts and how?

"14. What form of Trading statement have you found the easiest of comprehension for the average student? Why?

"15. If you had your choice for a course of study in bookkeeping, would you be in favor of selecting the text and laboratory exercises from one system published by one publishing company or would you prefer using several texts and laboratory sets which conform to a standard syllabus, but written and planned by several authors? Why?

"16. When do you introduce Controlling Accounts and Auxiliary Ledgers? How do you begin the study?

"17. Since the modern idea is that initiative should be developed as well as knowledge of routine, what are some of the methods you use in doing this?

"Recognizing that this takes more time, how do you cover a sufficient number of the usual sets in the allotted time?

"18. What is your method of grading bookkeeping problems and drills?

"19. How do you conduct examinations?

"20. What books on methods or other teaching helps have you found beneficial and worthy of consideration?"

I should like to see a thorough discussion of each of these twenty topics by the bookkeeping section of this conference. Furthermore, I should like to have shorthand notes taken of the discussion and have copies sent to all bookkeeping teachers in this state. Only by such a procedure could the real importance of some of these points be realized; only in such a way could some be led to see the advantage of one method over another.

As implied previously, it is inadvisable to present a syllabus any more rigid than the one prepared two years ago, until some of the questions involved in approach and subsequent treatment of subjects are discussed with a view to more uniform teaching methods and more uniform qualifications of teachers.

Business Arithmetic

An excellent syllabus in business arithmetic was presented to this conference two years ago. Since that time the University of Illinois has announced the acceptance of one-half unit of business arithmetic as part of the total credits accepted for entrance into the University. In its attempt to supervise the work, however, it seems that for some strange reason, the mathematics department rather than the commerce college or accountancy department was asked to formulate the general character of the course. As a result, we find a purely business or commercial course under the jurisdiction of a group of men not intimately acquainted with the problems arising in the practical application of such a course.

Accordingly, we find that in order to have entrance credit granted by the University a high school must not offer business arithmetic before the third year of the high school course. This is a great hindrance to our proposed ideal of a business arithmetic course in the second year preceding or at least concurrent with bookkeeping.

That business arithmetic is generally recognized as commercial subject is evidenced by the fact that teachers of the subject are assigned to meet with the commercial section rather than with the mathematics section. As indicated in the syllabus referred to above the subject emphasizes business procedure throughout. Business training is more essential to the successful teaching of it than is a mathematical training.

It is hoped that the Commercial Section will take some suitable action toward having high school requirements for Commercial Arithmetic placed under the direction of the College of Commerce.

The committee on syllabus for bookkeeping appointed last year reported that due to war conditions, it felt it was best to make no radical changes for the following year.

Motion made and carried that the formulating of a syllabus for commercial arithmetic be taken out of the hands of the Department of Mathematics and placed in the School of Commerce of the University of Illinois, and that the chair appoint a committee to attend to this matter. The chair appointed Prof. H. T. Scovill to act as chairman of the committee.

Mr. S. B. Irish, Township High School, Evanston, being absent owing to illness, the paper on Business English which he was to present had to be omitted. His outline course follows:

A Practical Course in English for High School Students of Commerce

By S. B. Irish, Evanston

The outline which follows provides for work covering two semesters and is intended as a specialized course in English—not as a substitute for any regular high school course.

This course is elastic enough to be adapted to the needs of pupils who are pursuing a four-year or a two-year course in the high school. It might well be offered in the second year for two-year pupils, and in the fourth year for four-year pupils.

Proposed Revision of Business English Syllabus of 1916

I. Study of Words

1. Instruction and practice in use of dictionary
   a. Diacritical marks
   b. Pronunciation
   c. Constructing definitions
   d. Prefixes, suffixes and syllabication
   e. Spelling (Weekly spelling lessons throughout the year)
   f. Words of a general business nature; also synonyms and homonyms.
      1. Spelling
      2. Meaning and derivation
      3. Pronunciation
      4. Application

II. Composition

1. Sentence Structure
   a. Grammatical construction.
   b. Desirability of short sentences
2. Paragraphing
   a. Methods of developing an idea effectively by means of a group of related sentences logically arranged
   b. Tests of a good paragraph
   c. Condensation
3. The extended discourse
   a. The story (Applied to business situations)
   b. Description (Especially of merchandise)
   c. Explanation (Especially of merchandise values)
   d. Argument (Relation to business.)
   e. Preparation of outlines
   f. Writing from an outline
   g. Speaking from an outline
      1. Reports on trips, interviews with business men, readings from newspapers and magazines
   h. The business letter
      1. Mechanical construction, including arrangement, punctuation, and use of capitals
      2. The tone
      3. The content
      4. The purpose
      5. Writing of business letters, etc.
         a. Ordering goods, with attendant letters
         b. Application
         c. Inquiry
         d. Recommendation

e. Unfavorable reply to inquiry
f. Collections by mail
g. Contracts by mail
h. Telegrams
(Several other types of letters might be added, depending upon showing made by class.)

III. Sales

1. By personal interview
   a. The sales process
      1. Demonstrations, using articles of trade after careful analysis of the articles selected has been made (Really a specialized form of oral composition)
2. By letter
   a. Writing of sales letters and follow-up series
3. By advertising
   a. Study of mediums of advertising
   b. Tests of good advertising, including examination and criticism of a collection.
   c. Constructive work in advertising
      1. Headings and slogans
      2. Human interest element
      3. Pictures
      4. Colors
      5. Alignment
      6. The message
      7. Ethics of advertising

IV. Business Organization and Processes

1. Production of raw materials
2. Transportation of raw materials
3. Manufacturing
4. Distribution and consumption
5. Markets
6. Legal aspects of organization
   a. The partnership
   b. The corporation
   c. The bank
   d. Common carriers

(Composition work, oral and written, involving content suggested by study of IV)

Note: If duplicated in commercial geography, section IV might be omitted, and other sections amplified.

Prof. A. R. Williams of Normal University, Normal, Illinois, presented an outline syllabus in commercial law which was discussed with interest. The outline follows:

Economics: It seemed to be a prevailing fact that the majority of schools do not have a course in Economics. The reason seemed to be two-fold. Lack of room for the study in the course, and lack of preparation on the part of the instructors. The need for such a course is self evident. The best way to familiarize ourselves with the course is to get in touch with schools that present the subject successfully. It was suggested that those so interested should write the chairman for data on file.

Shorthand and Typewriting: Miss Agnes Barrett of Centralia led the discussion. She stated that her stenographic course covered two years, the junior and senior years of the high school course. In both shorthand and typewriting accuracy was aimed at the first year; the second year emphasis was placed on speed. At the end of the second year the student should be able to take shorthand notes at the rate of 100 words per minute, and write on the machine at the rate of 60 to 65 words per minute, and to be able to transcribe at the rate of 25 to 30 words per minute.

A syllabus for commercial geography was presented by Prof. Stenson of the University of Illinois, which was discussed and amended.

Motion made and carried that the same method of round table discussion be employed in 1919 as this year.

Motion made and carried that commercial teachers should take steps towards some definite practice as to what years high school students should take their commercial work. The general opinion of those present seemed to be that to place students of all classes in the commercial courses without reference to their equipment to do the required work was an undesirable method though prevalent at present; that the work could best be done in the last two years of high school.

Dean Weston of the University of Illinois was reelected to the program committee.

The members of the program committee for the coming year are:

I. L. Rogers, Waukegan, Chairman, 1920; N. A. Weston, University, 1921; Agnes Barrett, Centralia, 1919; D. L. Lewis, Danville, Secretary, 1920.

Adjournment.

G. W. Blomquist, *Sec. Pro Tem.*

6. County Superintendents' and Village Principals' Section

The County Superintendents' and Village Principals' Section met in Room 354, Administration Building, at 9 A. M. November 22d.

Mr. S. D. Faris was continued as President. County Supt. W. A. Hough (1919), County Supt. O. Rice Jones (1920) and County Supt. C. H. Watts (1921) were elected as committee.

W. S. Booth, the permanent Secretary, was made a member of this committee.

The first part of the program was in charge of Professor H. A. Hollister. His topic, "The Teacher Problem in Rural and Village Schools," was ably handled. Mr. Hollister pointed out very clearly the great need of thoroughly qualified teachers for rural and village schools. The following is a copy, in brief, of his presentation:

The Teacher Problem for Rural and Village Schools

Further advancement in education in this country must depend largely on the solution of the problem stated in the announcement of this discussion. The readjustments needed in elementary education as well as the further ad-

vancement of science as it applies to our social, commercial and industrial economics demand better teaching in these schools from which comes the chief supply of the men and women who do the world's work. No successful readjustment of our high schools can become generally effective that does not thus build upon a surer foundation from these lower schools.

The enforcement of sanitary laws, the building of better buildings, the creation of libraries, the organization of vocational curriculums, will be of little avail without a marked improvement in the rank and file of teachers.

The vast majority of our rural and village school teachers are now drawn from the graduates of the eighth grade or of the high school. Nearly all are without any special preparation for the vocation of teaching. Many are far short of the adequate scholarship; and an equal number, at least, are not at all seriously minded to the extent of considering their work as a settled vocation. Very many of those who come fresh from the graduating classes of our high schools know little or nothing about rural interests or rural conditions educationally.

Our normal schools are doing a noble work; but they are neither numerous enough nor largely enough attended to supply trained teachers even for all of the city schools. We are greatly in need of some scheme for the vocational preparation of those who are to teach in these schools of our rural communities. The high school, especially the rural community high school, drawing a large percentage of its pupils from rural districts, is best qualified at present to meet this need both scholastically and vocationally.

But we have never organized this work in Illinois as has been done in New York, Wisconsin, Nebraska, Minnesota and Kansas. We are in sore need of some constructive legislation here which should provide for the establishment and maintenance, in each county, of one or more high school departments for the vocational training of teachers. These departments should be adequately supervised by the state and should be subsidized to the extent necessary to pay the salary of a qualified instructor in the principles and methods of teaching as applied to elementary schools.

We are in need, also, of a more economical organization of teaching units. The present district system is obsolescent. It should be a matter of concern to all those interested in education to help in the creation of sentiment favorable to the consolidation of the elementary grades in our rural communities, not with the idea of thus establishing a rural high school, but purely in order to secure reasonably favorable conditions for the grading and instruction of pupils in the elementary grades. The rural high school thus created has not thus far proven a great success.

Such a reorganization of teaching units would go far towards improving the tenure of teachers as well as in a fairer adjustment of salaries—two elements of our problem of more than passing significance. It would also greatly facilitate supervision of instruction in rural schools.

With our community high school districts, destined to increase largely in numbers, we have established here in Illinois the basis for a unique and highly effective system of consolidated schools. With a law providing for a single Board of Education for these community high schools and all the underlying elementary districts, we should have established the machinery for rapidly evolving, with a minimum of friction, the centralization of the rural elementary schools into three or four schools of economic proportions disposed conveniently about the central high school. These schools would thus have a co-ordinating center in such a common Board as well as in a common local superintendent co-operating with the County Superintendent in maintaining the highest possible efficiency of the elementary units.

Possibly the time is not now ripe for putting into effect such a scheme; but may we not begin at once a more united and persistent propaganda for the creation of sentiment favorable to such a plan?

The second part of the program consisted of a round table discussion in charge of J. C. Hanna, State Supervisor of High Schools, on "The Relations of Two Year, Three Year and Four Year High Schools to the Grade Schools and to each other."

Mr. Hanna, in introducing the subject called attention to the great variety of conditions that prevailed among the high schools of the state, and especially among the smaller high schools, before the passage of the laws specifically providing for the supervision of the high schools of the state by the office of the Superintendent of Public Instruction and the establishment and enforcement of standards for their recognition.

He set forth the plans for their supervision and recognition and presented statistics showing the number of high schools which have already received certificates for conforming to the requirements of the State Superintendent's Office: about 525 Recognized Four Year High Schools, 100 Recognized Three Year High Schools and 150 Recognized Two Year High Schools—a total of 775 high schools holding certificates of recognition. He also explained the difference between "Regular" and "Probationary" recognition and the distinction between the terms "Recognized" and "Accredited."

Attention was called to the advantages that come to a pupil who can attend a fully organized four year high school and, on the other hand, to the inconvenience and even dangers that often attend the sending of boys and girls in their early teens away from home, in order to attend such a school, and the consequent and very natural desire of many parents to keep their children during the first two years, at least, of the high school period and still not to have them lose out in securing a high school education.

This condition of things makes it wise and proper to encourage the formation and development of Recognized Two Year and Three Year High Schools, and it also makes it proper for such safeguards to be thrown around these and such strictness and sympathy to be observed in their supervision as shall make it possible for those young people who complete such a two year or three year course in a recognized high school afterwards to go to a recognized four year high school, receiving full credit for what they have done and completing their full high school course within the regular four years.

There must be intelligent, sympathetic loyal co-operation on both sides in order to secure such results, and when such intelligence, such sympathy and such loyalty are manifested, satisfactory results are possible. The "little school" people must not be negligent and the "big school" people must not be cranky.

The discussion was taken up by County Superintendent S. D. Faris of Carthage with special reference to the two year high schools, by County Supt. C. H. Watts of Urbana and County Supt. W. F. Boyes of Galesburg with special reference to the three year high

schools, and by Supt. R. D. Kean of Watseka and Prin. P. M. Watson of Robinson from the point of view of the four year high schools. Each of the county superintendents presented helpful experiences and practical suggestions as to how these problems may be solved through friendly, frank cooperation of all the school superintendents and principals of the county assembled for that purpose, and the discussions by Supt. Kean and Prin. Watson presented the difficulties in these adjustments and gave some hints as to their achievement.

The very important point was brought out that through the operation of the non-high school district law passed by the last assembly it is possible to insist on the purchase of equipment for these small schools which brings them up to the standard of good four year high schools for such work as they undertake, since these schools if they *do* conform to these standards and hold a certificate of recognition are to receive from the tax levied on the whole non-high school district of their county the amount of the tuition for all high school pupils enrolled.

The discussion was closed by W. S. Booth, Assistant State Superintendent, the permanent Secretary of this section, who expressed his warm interest in the work undertaken by the section, his faith in the value of the section's meetings, and his earnest belief that such meetings and programs must work constructively in a continuous and intelligent effort running through a term of years to meet and solve the real problems that face the county superintendents and the village principals and the schools under their control—a most important work, since seventy-five per cent of all the high schools of the state have an enrollment of less than 100 and since twenty-five per cent of all high school pupils in the state are enrolled in these smaller schools.

Abstract of Discussion by Principal P. M. Watson of Robinson

The community high schools at the present time are confronted with a number of rather difficult problems in respect to their relations with the underlying districts. The Freshmen students entering these high schools as a rule come from city schools in charge of a city superintendent and from a number of rural schools in the high school district. Except in some especially fortunate cases there are undesirable conditions in these city and rural schools which the high school principal would like to remedy, but which he is powerless to attack. In one district there may be a superior school with satisfactory conditions throughout. In the neighboring district an entirely different condition may be found: We may find a dilapidated building; a poorly prepared, indifferent teacher; a school board whose sole desire seems to be to save money, and a condition of general indifference on the part of the whole community. Children from one school enter the high school well prepared: those from the other are totally unable to do the work. Frequently in the rural districts the original opposition to the high school still prevails: and sometimes from one cause or another relations between the high school principal and the superintendent of the city grades are strained. Yet this high school is expected to turn out graduates with the same ability as those who come from the city high school, where the entire school system has one head who is able to correct any conditions which interfere with the training of students below high school age. If he is to bring his high school up

to the standard of the city schools he must do what he can to correct the undesirable conditions I have mentioned.

In seeking a method of attacking this problem one must consider the pupils of the grades, the teachers, the school boards, and the school communities. If the pupils are indifferent and have no desire to attend high school, they will not come. Frequently they have never been inside the high school building. In some rural communities all they have heard of the school has been unfriendly criticism. Somehow we must reach these pupils and get them used to coming to the high school. Perhaps we can organize athletic contests between the different grade schools of the district. Perhaps when we hold our Farmers' Short Course, we may send invitations to the boys and girls of the 7th and 8th grades to attend. Perhaps the County Superintendent may be persuaded to arrange promotional exercises for these children which will take place at the high school building. In these and other ways we can accustom them to think of the high school as an attractive place and thus fire them with a desire to graduate from the institution.

In some cases we find in the grades teachers who have never graduated from a high school, employed by a board who are opposed to the high school. If let alone these teachers will exert their influence against the high school and will discourage pupils from coming. Some how we must reach these teachers. The County Superintendent can do much if he will to change their attitude. He may arrange for reading circle meetings and other teachers' meetings at the high school, and at least once a year arrange some social gathering to which all of the teachers both of the grades and high school should be invited. But we cannot be satisfied with converting the present teaching force to a friendly attitude toward the school. We must have an eye on the future teachers who will replace the ones now in service. With this in view the high schools of Illinois should plan to give Teachers' Training courses to prepare the high school students to be the teachers in these outlying districts a few years hence. When the majority of our rural teachers are graduates of the community high school, we shall see them advising their children to attend it and shall soon see a marked improvement in the attitude of those rural communities.

Yet the teacher, be she ever so enthusiastic, can not do very much in the face of an unfriendly school board. In some cases that I have known the teacher has been told in no uncertain terms that she must either quit advising her children to attend high school or resign. The school boards must be won over. In some places in the State the principal of the high school or the County Superintendent has called a meeting of all the school boards of the high school district and induced them to form a school board organization with officers, dues and regular meetings, at which the program consists of addresses by available educators and round table discussions by the board members themselves. This is a plan which I believe would in course of time bring about a great improvement in the attitude of school boards. Yet school board members as well as teachers change frequently and it is always possible that the work of years may be undone at a single election. The community as a whole must be aroused, and educated to feel a loyalty to the high school so that they will always elect desirable school board members. A number of community high schools in the state hold once a year what they call a Community Day Program, to which the whole community is invited. Athletic and literary contests are held; dinner is served at the building; May Day exercises or other appropriate entertainment is presented. This year perhaps Centennial Pageants will be given. Everyone has a good time and unconsciously comes to regard the high school as the social center of the community. Lyceum courses, athletics and similar entertainments during the winter do much to supplement the effect of Community Day. So by training the pupils, the teachers, the school boards, and the community to regard the high school as an important institution in the community we may

hope to eliminate many of the disadvantages under which we are laboring at the present time.

However, it seems to me that while much may be accomplished in these ways, yet, conditions will remain which nothing will permanently correct except legislation. We need a law which will tend to unify the educational work of the high school community in spite of the determined efforts of an energetic minority to prevent it. So long as we depend upon voluntary community co-operation alone, we shall be under the necessity of building anew every time a few objectors decide to interfere with the present arrangement. I do not profess to know what legislation would be best, but so far as I have thought it out, it seems to me desirable that the number of boards of directors should be materially reduced. What logic is there in having a dozen boards containing 30 or 40 different individuals controlling the schools of an Illinois township when the 50 cities in the United States which in 1910 had a population of over 100,000 inhabitants each had one school board whose average size is 10? Furthermore, what logic is there in having separate heads for city, grades and community high school that would not apply equally well to separate heads for city grades and city high school? Is it not time that Illinois was abandoning her long, out-grown district system? We are soon to have in Illinois a new Constitution. It is important that Illinois school men should make careful study of the Township, County and other school units in the various sections of the country and be prepared to recommend a new system of schools adapted to the needs of the Twentieth Century.

Synopsis of Discussion by W. F. Boyes, of Galesburg

We are yet far from the point of being able to offer to every boy and girl four years of training in a good high school. We all recognize the need and the simple justice of presenting such opportunity to every one who is able to profit by it. We are discussing three-year schools; and the fact that they offer three years of work instead of four is our first concern with them.

I do not know certainly that there is anything sacred or inviolable about just four years. It has come to be the generally accepted length of secondary school training. We are to get all we can for the children. Four years in this cause are better than three. So four years it must be for everyone.

Not that there should be no three-year schools. I shall undertake to say that there should be relatively more of them rather than fewer. But the way should be easily open from every one of them to another school where the additional year may be had.

Two things are to be done—get the schools and get the children into them. There are enough high schools in Knox county easily to care for all her students. But they are not all in just the right places; and, what offers probably a harder problem they are not properly related to one another. Some other counties are in the same condition, no doubt, though very many more high schools are needed in the State.

The subjects offered by a good four-year high school are numerous. The necessary equipment is both extensive and expensive. The class groups in such a school are many. It follows that a good high school, one providing all that children should have, must necessarily be a large one. That is, large in comparison with some of the schools we all have in mind in connection with this discussion.

It is impossible to gather all the children into these large high-school groups. If the small number of children in the group imposes limits upon the school, the limitation should be in number of subjects and length of course rather than in quality of work done. All must be good schools.

Observations near home lead me to say that, under present conditions, a short-course school loses in at least three ways. First, is the meager opportunity to its students who would, if permitted, take a full course. Second,

those who fall by the way drop out in about as large numbers and about as far from the end of the course in a three-year as in a four-year school. That is, the percentage of those entering who appear in the upper classes of a four-year school is as high, generally higher, than in a three-year school. Third, the drawing power of the school with the fewer teachers, smaller number of subjects and shorter course is less. And a smaller proportion of the children concerned will finish the grades and enter such a high school.

But you can't have a strong four-year high school with a small number of children. Let it be a short-course school. Then everything should be done to make the three-year school as good for three years of work as a four-year school is for four. It is impossible, it seems to me, to make a two-year school one-half as good or a three-year school three-fourths as good as a four-year school, unless the course is organized and the work done with the full course in view. So this will require that every short-course school be organized in relation to a four-year school.

Just over the line in Henry county, twenty-three miles from Galesburg, is Galva, a city of three or four thousand people maintaining an excellent high school. Between Galva and Galesburg are three Knox county towns of five or six hundred to a thousand people. Each of them has a four-year high school. These places are only four miles apart. Not all the children that should be in the schools are there, of course; but in the nature of things, until those towns become much larger, or until the adjacent country population becomes much denser, there cannot be three strong high schools in that eight miles.

Twenty-six miles in another direction is Elmwood in the edge of Peoria county, also maintaining a good high school. Between Elmwood and Galesburg are one three-year and four four-year schools. One of them is a fine school of about one hundred twenty-five pupils. The others are all small and not any of them is more than four miles from another school.

These may be very pronounced cases. But I know of others not greatly different, and very likely you do. If this sort of condition does not make for the best schools, there ought to be a better way found.

The fact that these communities maintain schools for from eighteen to fifty-five pupils shows something of their educational temper. They prize their children and wish to do well by them. They do not always estimate highly the people of the next town, nor care to work very much with them in a civic way. But notwithstanding the local pride, the prejudices, or even the jealousies of the people of these communities, there are cases where two or even more of these small towns should be placed, for school purposes, in the same district. Let four years of work be done in one center and two or three in the other. When the pupils have finished the work of the short-course school and are ready for the senior class of the other—but still their own—school; it would be no great task certainly to take the small group in a district conveyance to the next town. More particularly will this soon be true since Illinois has started toward the building of roads.

The courses of the two schools or of the school district will be unified, probably much of the work requiring laboratory and other expensive equipment being done at the main school.

This sort of thing will scarcely come faster than consolidation of one-room schools if left altogether to the people themselves. But it may be that even more is at stake here than in the case of the elementary schools. The high school is just beginning to come into its place as a recognized and generally used part of the common school. If many of these small high schools are permitted to struggle along with meager, ill-taught courses while their patrons take it for real high-school training, harm will be done the cause. Every care should be taken that the high school idea be not cheapened in the minds of the people or in the lives of the children.

Synopsis of R. D. Kean's Discussion

To make the subject a concrete one it seems best to take a concrete case. Watseka is a city of approximately 3500 inhabitants. The high school is fed from 41 different school districts, which include 13 different villages, 8 of which have high schools having a course of less than 4 years. These 41 districts are represented by a total of 112 pupils in our high school—this, in a nutshell, shows the intimate relationship existing between grade schools and the various kinds of high schools.

In the Watseka high school the non-resident material sets the standard because it is in the majority. Considerably over half of those in the freshman class of one hundred, are non-residents, and half of last year's graduating class were non-resident pupils. Although the non-resident material really sets the standard for our school, we are not anxious to discourage its attendance, but on the contrary, we are using every means possible to increase it, and it is surprising what results can be obtained by a little advertising literature and personal visitation to the contributing districts and villages—the response is immediate. The County Superintendent of Schools has established Community Teachers' Meetings throughout our county. Many of the districts which contribute to our school are represented in our teachers' meetings. These meetings develop many possibilities for closer articulation and co-operation.

The majority of our non-resident pupils come to us as well prepared as are those in our own school, yet there are a few districts and one or two high schools having a course of two or three years whose conditions convince us that a better condition could be brought about by raising the standard of teaching and by making the course of study uniform for our contributing high schools of two and three year courses.

In checking up the preparation of our 377 teachers in Iroquois county, I find that approximately 38 per cent are not high school graduates, 44 per cent are high school graduates, 8 per cent normal graduates and 10 per cent college graduates.

There would be a marked improvement in the teaching standard if all teachers were required to be high school graduates. If the graduates of high schools having a normal course could teach for a term of years without examination as do normal graduates, our school could place high school graduates in all our country districts, which, at present, do not have such. This concession to the high school graduate would stimulate our school in two ways—it would enlarge the graduating class and these graduates in turn would enlarge the freshman class by interesting pupils in their various schools in our Watseka school.

I firmly believe that our two or three year high schools should not be accredited by the State and permitted to draw tuition money from the non-high school districts unless their teachers are, at least, normal graduates or the equivalent. And it is a serious mistake to permit teachers to give instruction in those subjects in which they have had no special training in some good institution.

We have a comparatively large number of high school pupils in the county who come to us with credits in subjects for which higher institutions of learning do not give us credit, since we are not offering those subjects in our course. That means that we have had high school graduates who, for this very cause, were conditioned on entering the university. There should be a uniform course adopted for high schools which are closely articulated. I would suggest that the state inspector of schools in giving recognition to such schools, deal with them collectively and not individually.

7. Domestic Science Section

The conference was called to order by Miss Bevier, who gave a report of the meeting of the Illinois State Food Administration which had been held the day before in Chicago. Miss Bevier said that people must save all food possible until the crop of 1919 is gathered and that the Food Administration will not be demobilized for some time to come. After the first of January, 1919, Mr. Hoover will give some definite data. The first week of December is to be "Conservation Week" and everybody must work to establish among the people the right attitude of mind concerning the need of saving and the feeding of the starving peoples of the world,—our allies, the neutrals, and also the conquered central powers. Both our great allies (those who can practically care for themselves) and our lesser allies, will need assistance. When we realize that probably 10,000,000 people in Russia alone will die this winter, in spite of all we can do, from cold and starvation, we can see that our burden is still heavy. This number of people equals the population of New York State. We owe a great debt to Russia for, no matter if she did drop out of the war, she kept the fighting going in the East till America could get ready. No people have a more honorable record in the war than the Czecho-Slovaks. Greece has had a hard time and needs help. The neutrals have had a desperate struggle, children have been kept alive but have not grown. The people of the United States should live up to the Christian ideals which we claim to possess and help to stabilize the tottering German government. As we have shared in bringing victory, so we must share in the responsibilities of victory.

The report of the Executive Committee was given by Miss Florence H. Churton, and is as follows:

The members of the Executive Committee, like every one else, have been doing war work during the past year; no special work for the High School Conference has been undertaken and, therefore, the arranging of the program for today is all that there is to report. All of the members agreed that there should be an equal amount of time allowed for both food and clothing discussions, but the amount is necessarily limited through having but a half-day session.

Of the members, Miss Julia Tear has left Illinois and is now teaching in Oklahoma, and Miss Bertha Case's term of office expires this year. (The date given for Miss Tear in the list in the front of the program leaflet is not correct.) Their places are to be filled today. Both of these members have contributed a great deal to the success of the Conference.

The work on the Syllabus rests where we left it last year. As was said then,—there are only a few additions to be made to the subject matter but there are all of the references published since 1910 to be inserted. This list, you remember, was worked over all last year by the members of the Executive Committee and other teachers and

is to be discussed and voted upon by the Conference at some future time.

The Chairman appointed the Misses Olive Gower, Glen Opie, and Ailsie Stevenson as a nominating committee.

Miss Emily Frake of Parker High School, Chicago, gave a review of the food courses for the year as they will be carried out in her classes. The pupils have a two years' course in foods,—the first year being a general study of food, and the second year, household management. In carrying out the conservation plans, Miss Frake would give standard recipes to the class and in these recipes show the alterations that are to be made for substitutes. The recipe should always show the lowest and highest limits in regard to fat, sugar, etc. Then experimental work would be assigned with varying quantities, and comparisons made of the different products. In this way the pupils during the first year gain a knowledge of the principles of cookery and should be able to carry out their ideas at home. The second year's work is home management in which meal planning, house planning (kitchen and pantry) and furnishing, budgeting, laundering, home nursing, and other topics are carefully studied. Throughout the course the aim is to bring about a close connection with the homes of the pupils. For example, in the meal work, the pupil plans meals for two people and then meals for her own family with definite prices and amounts. This undoubtedly makes the girl do some of the family marketing. She must plan for *overlapping* meals and so learn to be thoughtful about using up left-overs. In the house plans, the pupil, after practise, draws a plan of her home kitchen and with the help of the teacher studies to make it convenient and well furnished. In some cases the alterations have actually been made by the families. In the furnishings, pictures and samples are used instead of drawings. With the laboratory work there is some study of ancient history on homes, English architecture, and other related subjects.

A discussion was opened concerning the prerequisites for domestic science courses in the high school. There is a great deal to do with regard to grading the work according to years. Too many schools allow students from *any* of the four years to register in the domestic science classes so that, for example, freshmen and seniors often work together and as a result the work is unsatisfactory for all concerned.

A paper on "Textile Problems of Today," was given by Miss Sarah A. Sutherland, of the University Home Economics Faculty and is as follows:

It is rather hard to tell you in brief what the "Textile Situation" is at the present moment. The Government, of course, has been the largest single purchaser of all fabrics and until a clear policy is laid down by the War Department and announced to the public, nothing can be safely stated.

Briefly, the wool manufacturing industry has been severely handicapped by lack of raw material. To give you an idea of how great

this handicap has been, the Government, which controls the entire wool supply, was not allocating any wool for civilian purposes. This situation has been modified to the extent that limited quantities of such wools as are available, are now being released in order to relieve immediate and urgent manufacturing necessities.

"In no part of the textile industry, is a more sudden or radical readjustment called for than in wool manufacture. The Government has sufficient supplies of most wool goods to last for several years, and it owns nearly 400,000,000 pounds of wool, in addition to the South American and Australian wools under contract and yet to be shipped. The Government will buy no more wool, and but few more goods. Most of the emergency organizations that were built up for purchasing and control can be disbanded. The Government cannot get out of the wool business as quickly as it got into it, nor as cheaply. One plan for the release of army wool for civilian use which is being considered by the Board is said to be the disposal of the wools by open auction, to be distributed over a sufficiently long period to prevent avoidable market weakness.

The clothier's representatives opposed the auction plan of selling wool and suggested distribution at present issue prices for at least three months, thus giving them time to dispose of present stocks of cloths and clothing. Some Government officials object to the auction plan, unless it carries a minimum price at which wools can be bid in by the Government.

The War Department authorizes the following: "Pending the announcement by the War Industries Board of a definite plan for disposing of the wool stocks belonging to the U. S. Army, in order that there may be no reduction of manufacturing due to lack of raw wool, the Government wool distributor has been instructed to release to the manufacturers for civilian use, limited amounts of such wools as may be available. The price will be the present Government issue price. Terms of sale, cash on presentation of documents."

A report given by the Bureau of Markets shows stocks of wool in hands of dealers and manufacturers on September 30, 1918, were about 182,000,000 pounds less than on September 30, 1917.

In cotton the limiting factor has not been raw material but machinery. Again, as soon as the Government's policy is outlined this situation will become clarified and modified in accordance with the War Department's course of action. The value of the cotton crop grown in 1916-17 excluding seed, has been estimated at $1,146,102,-225.00 and the prosperity of the South has introduced an element into the market of which very little account was taken before the war. In previous years, the bulk of the crop was marketed during the autumn. Under present conditions with improved banking and warehouse facilities, the South has fully demonstrated its ability to market slowly, and from the very beginning of this season, has followed an almost unbroken policy of selling only on advances.

With regard to the subject of price-fixing Dr. Thomas W. Page, Chairman of the Cotton Committee appointed by the President, issued the following statements: "The Cotton Committee was directed to recommend basic prices on cotton, if upon investigation a fixed price should be found necessary. The Committee has ascertained that such a necessity does not exist, and its report, which is now nearing completion, will be submitted to the President within a few days.

"It has been the policy of the Government to fix the price of any commodity, only where there was an actual prospective shortage, and in the case of cotton, such a shortage does not exist.

"The Committee further reports that there is no way of enforcing a fixed price except through the readiness of the Government to purchase the crop. Under a fixed price system, the cotton exchanges would be closed and merchants, bankers and other middlemen would be put out of business.

"As there is not for cotton as for wheat, an official system of inspection and classification, such a system would have to be created. This could be done only at great cost and in the course of many months. The committee is convinced that before the necessary organization could be effected and adequate financial arrangements completed, the necessity for them would have ceased, and that in the meanwhile, immeasurable damage would have been done through the disruption of present marketing agencies and the checking of the movement of the cotton from the farm to the mill.

"The Committee will also recommend the continuance of the Committee on Cotton Distribution, with the view to bringing into proportionate use all grades of cotton.

"The Committee on cotton distribution authorizes the following statement: "The stoppage of sinkings of U-boat submarines, the monthly increase in new ship tonnage and the releasing of ships now engaged in supplying the fleets of the Allies, together with the freeing of space previously used in sending munitions to Europe, will mean a large increase in available tonnage for exports.

"The world requirements of cotton to meet the increased demand for clothing will henceforth be on a considerably ascending scale. Based on the reports of this committee from the various foreign countries, we assume their requirements of probable imports of cotton under present conditions to be over 2,000,000 bales in excess of last season's takings.

"Europe is almost denuded of cotton and cotton goods. The potential buying powers of the world which will be aided and hastened by the establishment of the necessary credits will quickly assert themselves."

"Senator Hoke Smith of Georgia is authority for the statement that restrictions on the shipment of cotton, except to enemy countries and to northern European neutrals, have been removed. Shipments

to countries contiguous to Germany will be made more freely when that country complies fully with the armistice.

Increased quantities of cotton are being sent to Allied countries. Japan is especially anxious for American cotton, as it was impossible to secure raw material from India. With increased tonnage, the supply of which countries desiring cotton seem willing to furnish, would increase the movement."

In the silk situation, the Government has been a large buyer only of spun silk fabrics. There has been no unnatural restraint placed upon the manufacture of thrown silk fabrics. From the present outlook, the world's supply of raw silk, judging by the crops of the past spring and summer, will be more than ample for all purposes of consumption. One of the chief drawbacks is the scarcity of help in the silk mills.

One result of the war has been to establish the position of the United States as the silk manufacturing center of the world, while Japan leads the world in the production of silk.

The chief use of silk in warfare was probably in the manufacture of spun silk cartridge bag cloth. Artillery experts claim that when big guns are fired, it is necessary that the explosives be placed in bags made of material that will burn without leaving an "afterglow." Silk is the only fabric available in sufficient quantities that would meet these requirements, so that silk was necessary in one of the chief operations of war, the firing of artillery.

Flax, because of its length in line yarns, and particularly of its strength and lack of stretch, was the fabric best suited for airplane wings as long as the supply lasted.

Early in 1917 the linen situation was a shortage from the normal of forty-five per cent to meet a demand of at least forty per cent above the normal. The importation of linen fabric ceased several months ago. There is very little pure linen on the market at this time. Flax has been raised in the northwestern part of the United States for the seed only. Some experiments of raising flax for the fibre have been tried. And although details are lacking it is understood that three branches of the Government, Department of Commerce, Department of Agriculture, and War Industries Board, are getting together to try and introduce into the United States a linen industry.

During the war our nation has proven what can be done in the way of conservation. It is using over and over everything that can by any stretch of the imagination be made to serve again. This conservation must be continued as long as there is a shortage of wool.

Some of the teachers reported that they were including renovation of hats and dresses in their courses. The materials are bought by the pupils themselves and made over or are donated by various people in the districts. Now that work for the Red Cross and charitable institutions has been taken up by the schools, it is earnestly desired that the teachers will continue doing something along this line.

Miss Florence Harrison, who has charge of the teacher training in the Urbana High School, under the Smith-Hughes Act, gave a short talk, concerning her work. In this work the student teacher has charge of a class for twelve weeks and for this teaching receives five semester or six and one-half quarter credits. Projects will be carried out and every effort made to give the high school pupils excellent courses and the student teachers training which will fit them to qualify for excellent positions.

Miss Cora I. Davis, State Supervisor of Domestic Science, gave an address on Harmonizing of the Smith-Hughes work with existing conditions in the High School. She explained that the vocational courses will not differ greatly from any well-organized courses now carried out in some of the better high schools. There will be a great advantage, however, to the pupils in requiring registration in related subjects,—science and art. The aim of the work is to be so well equipped for housekeeping that one will have time for something else and something else to think and talk about.

The courses are to be organized to suit various groups,—that is, they are unit courses. If there is only one semester of a subject offered, it should include all phases of that subject in it, as for example, serving of meals, accounting, etc. Related art should include, not drawing entirely, but exercises which teach subordination, symmetry, etc.

The clothing courses should not all start with underclothing and end with a dress. Let the underclothing be taken up at the end of a course for rapid work. As courses are now given they are not differentiated and too often are just "cooking" and "sewing." Have the pupils learn quick ways of doing things.

There should be cooperation with the home in all of the work; therefore, have home projects. It should not be simply *assisting* at home, but should be a duty which calls for real thought. Marketing problems are good for home projects. In sewing the ideal should be, not to sew for one's self but for others in the family; therefore, children's clothes, for example, should be made.

In these vocational courses the pupil must register for a year and must study science and art as a background,—one semester of each. There is to be one-half day given to practical or related work. No definite recitation and laboratory periods are to be planned. The whole work should be the same as other good Home Economics courses.

The nominating committee reported the following nominations for members of the Executive Committee for three years: Miss Emily Frake of Parker High School, Chicago, and Miss Anne Stoker of Centralia Township High School.

The afternoon session was a joint meeting with the Science Section.

8. The English Section

The eleventh annual meeting of the Illinois Association of Teachers of English convened in the auditorium of the Christian Church of Champaign on November 22, 1918. President Trams called the session to order at 9 o'clock. After reading of the minutes of the previous meeting, the presentation of the treasurer's report, and the appointment by the chair of a nominating committee, the session proceeded to the reading and discussion of papers.

President Tram's address, "Better Oral English," as is usually the case with the President's address, perhaps because it comes first on the program before the ice of reserve is broken, was not discussed. It was, however, both practical and suggestive. The paper follows.

Better Oral English

When I opened my program and saw what I was down for I experienced a painful memory. For me oral English was once a striking subject. There was a time when I had little knowledge of American speech, more especially the rich, racy, picturesque speech dug from the soil. But I got it. And this was the way. Two hired men were putting corn-stalks into our haymow. The weather was cold. The corn-stalks were frozen stiff. The door through which they were putting them was small. The language the men used in pushing the stalks through the door was rich, racy, picturesque, and dug from the soil. I marveled admiringly.

That afternoon, in response to mother's request, I was bringing in an armful of wood. On finding the kitchen door closed, I tried to open it with the rich, racy, picturesque words I had learned that morning. Just then father came around the house—The following two weeks I sat on a pillow—Yes, oral English is a painful memory to me. But because of that, I have no desire to make it so for you. To compel you to hear "great argument about it and about" might make it so; accordingly I have gone over my speech and translated all the practical advice I have to give into five very brief statements and put them here at the very front of my speech. These are they:

(a) Think of your lips
(b) Watch your consonants
(c) Sound your vowels
(d) Separate your syllables
(e) And above all, see to it that you make the proper impression upon any one who may hear you.

Whether I regard the present status of oral English as matter for smiles or tears is largely a question of my quiddity. Speech, and especially American speech, is a kind of linguistic Janus three times multiplied. And just when to stick Bourbonism between somebody's ribs for a slip in oral righteousness, or when to graft bourgeois prose on the lips of verbal punctiliosity, is enough to develop a case of nerves. Others of course, besides myself, have had such "cases" developed, so why should I kick? Anyway, there are enough logomachists to keep the language where it belongs.

Purists we find who dip their pens in the well of sacrosanct conformity, and go magazining with linguistic shibboleths for Bohemians word-hunting in the shadow-zones of speech. Neologists we meet who pin epitaphs on euphemists, and strip the pure in speech of their peacock-plumes, leaving them to their deckle-edged prudery. Some of them are Don Quixotes spinning verbal Cockaynes in a world of slang; others are Sancho Panzas X-raying purists who joust in the lists of standardized speech.

Personally I don't like this better oral English. It plays hob with all my natural tendencies. I like to clapperclaw mine enemies, stuff my opponents, bark at my clerks and roast complacent calamity-howlers. But this better English insidiously takes all the joy out of life. I am left helpless in the presence of mine enemies. Therefore all restrictions on speech are poison to my ambitions. The other day I read Mr. William Watson's "Pencraft." He says my speech must be "loquitive," "cantative," and "scriptive." Now in order that I may meet these requirements, I must have wisdom, sympathy, and humility. Of course I want to be wise, and I want to be sympathetic—with reservations, but I'll be darned if I want to be humble.

I have also been reading Henry James. I may not tell you what I think of his patriotism, because this better oral English movement forbids. Instead, I shall have him tell you what he thinks of American speech. American speech, he says, is a "limping and shuffling" combination of "twanging and whinnying" sound intonations. I suppose that our cacophonous speech accounts for the fact that he renounced his American birthright in order to become a subject of His Majesty, King George. However, that may be, his criticism is a reminder.

Quintilian said many centuries ago that language is established by "reason, antiquity, authority, and custom." If this is true, we ought to regard our language as an inheritance not to be spent, but to be preserved and improved, so far as that is possible. I think it was Herbert Spencer who said that the care of a national language should be a matter of conscience; that we should not misuse words; that we should accept it as a duty to mankind to check bad habits of speech. Another statement to the point is from Schlegel. "A nation," he says, "which allows her language to go to ruin," is parting with the best half of her intellectual independence, and testifies her willingness to cease to exist.

That the dominating strength of a race is seen in its ability to compel other races to accept her language is a matter of history. And that the life of a language depends upon its ability to acquire new words that shall become legal tender in the current coin of thought is also a matter of history. Language is not a gift, it is an achievement, a process, a transformation, a resultant of opposing strains. One is the strain for change. It may be for better, it may be for worse. Regardless of how firmly intrenched certain modes of speech may be, active agents, the intermixing of races, new personal and racial experiences and customs, appear from time to time to wage war against them. And in the long run there is always a change. Ordinarily, however, the process is slow because of a second strain, the strain for consistency. But at a time like this, when a whole age has culminated in a cataclysm, when the intermingling of races, languages, customs, and ideals has been on a scale Titanic in its proportions, and when the strain for change during the period of reconstruction will be working overtime, the situation seems a bit tough for consistency and standardization in any language.

New ideas have been born. These ideas will have their infancy, their youth, their time of stress and struggle. Language is the fittest vehicle in which they can journey to their full fruition. As these ideas change, so will language. It were as hopeless for us to cling to that which is passing out, as for us to wear our baby-clothes and sleep in a baby crib. We are in the line of evolution—willy nilly.

Still this is no time to chloroform our faith in the virtue of better oral English. Rather it is a time that should put joy into life. We shall have something to fight against. And we need not be worried with the prospect of immediate success, either. In fact, we shall have to get our joy out of the vision that we may have of better English. Having the vision we shall will to possess it.

This better oral English movement is a good deal like the Ancient Mariner. To be sure it is too recently reincarnated to have a long gray beard,

a glittering eye, and a skinny hand; yet despite its seeming youth, most of us are Wedding Guests who cannot "choose but hear." Let me fortify myself, however, before I make any criticisms or suggestions at all, with the confession that I am not like the Ancient Mariner, constrained by an inward agony to teach by his own example. Shakespeare's Portia states my position exactly when she says, "I can easier teach twenty what were good to be done, than be one of the twenty to follow mine own instruction."

Difficult though it may seem, the task of conserving our language as a fit vehicle for the expression of our American ideals, is worth our concerted action. Now that the war is over, more than ever before, we shall have need of some means to make those ideals the practical possession of all. Certainly there is no better means than our own language. And if the ideal bought with the blood of our best is worthy, then the language which is not only its vehicle but its symbol, should be worthy. To make it so, and to keep it so, will do much to bind our poly-glot population into something like national solidarity.

This is our high task, a task which, rightly viewed, must resolve itself into a privilege. No real teacher of English can regard it otherwise. Today our language is spoken by more than one hundred fifty million people. Isn't it something to be the maker of words that shall crystalize the ideals of these millions! I don't know which is the more wonderful, the human soul or human speech. Perhaps speech is the soul become vocal. Certain it is that language is the master of all keys admitting the possessor into the secret chamber of his nation's ideals. For that reason it must be kept clean, it must be made strong, it must become democratic.

While there is no provincialism, no dialect form which may not play an important part in a national language, there is a kind of undress speech which may horrify not only the prim apostle of culture, but which must be avoided by all who desire to keep merely within the consensus of usage among the English-speaking peoples. Even though there are few absolute rights to our speech, there are discoverable wrongs. Against such wrongs, which I shall mention later, we must buttress our language. There are set formulæ of speech, reduced from common sense, which the pupil ought to respect. It is our business to make him respect them. But how? you ask.

Well, one way is to drill the pupil on what some are pleased to call fundamentals. I think I could fall in line beautifully if we could agree on fundamentals, if we could determine who needs them, and if we could drill to a successful finish. But drill, I think, should be the special prerogative of those who can do it well—if they can. Many of us can't do it well. And those who can spend too much time in forcing language to make its appeal to the eye rather than to the ear. Ears, they seem to think, are ornaments—or places to hang ornaments. We do not sufficiently realize, all of us, I mean, the importance of training the pupil's ear. I often find in my classes some individual who can no more detect the difference in sound between pure and impure speech, than another can tell a coherent from an incoherent sentence when the solecism is due to a violation of parallel construction. In the latter case it is his understanding that needs attention; but in the former it is his ear. Having a keen sense of the proper sound of a word, the pupil will tend to correct his own faults. Drill, if that is your forte. But remember that so far as oral English is concerned, a pupil will learn only what he hears, whether it is his own speech, or the speech of someone else. Our pronunciation will be his pronunciation; our slang, as Mr. Hitchcock says, will be his slang—and then some.

Although our speech is not the efficient and splendid instrument that it should be, it is a tool, however, that those who comply with the simplest requirements of standard English, in the broadest sense of that term, may use without apology. These simple requirements are correct breathing, proper vocalization, full articulation, clear enunciation, and accurate pronunciation.

Correct breathing and vocalization belong so largely to the specialist that I shall not attempt to speak of them here. Enunciation and articulation go hand in hand, so that what I may say of one will likewise be true of the other. My few remarks will, therefore, concern themselves with articulation and pronunciation.

Articulation means the joining of sounds so that they produce words. Paleontologists speak of the articulation of a skeleton. By that they mean the putting together of all the bones that constituted the frame of the animal. If any bone is missing the skeleton cannot be articulated. So it is with words. ALL the sounds that are necessary to the making of a word must be pronounced, otherwise the word cannot be articulated. Too many pupils give voice to words that are only partly formed, some lacking heads, some bodies, and some tails. To slur letters, to give incorrect or indistinct sounds to letters, to run them together—to say bein' for being; p'r'aps for perhaps; gentlemun for gentleman; histry for history, labratory for laboratory; to hear lawyers explain constertooshun, clergymen advise the Deah Lawd, and school teachers ask ja-get-cher-check?—these are common instances of bad articulation. It is possible, of course, that faulty articulation is sometimes due to some defect of the vocal organs, but more often it is simply a bad habit. And the cure for a bad habit is the substitution of a good habit.

If it is possible to overcome faulty articulation and enunciation, it is comparatively easy to acquire correct pronunciation. I do not mean a pronunciation that shall be the standard for everybody. Not at all. That is quite another matter, and I believe, an impossible one. By correct pronunciation I mean simply the utterance of a word as a whole correctly, with proper accent, as determined by authorities. And by authorities I do not mean dictionaries, or desk books of "words frequently mispronounced." I mean simply the standard of pronunciation accepted by the best people native to a given section of country. Mr. Fred Newton Scott has phrased the idea to which I refer. Let me quote him. He says, "the stuff out of which a great national language is created is the simple, homely expression of sincere and sturdy thinking. . . It may be composed of all the dialects spoken in Chicago or in San Francisco. It may be the speech of Boston, of Texas, or of Montana. No matter. If it is the voice of high wisdom, of human nature at its best, the words will take on that power and charm which is the test of a great national speech. It is true that there are many kinds of American speech," he continues, "But the diversity is picturesque. And I for one should be sorry if the purists and the philologists succeeded in planing down our characteristic individual asperities to one uniform dead-level of etymological monotony." That is Mr. Scott's opinion. And many of us will agree with him.

To me, at least, his attitude is a very comfortable one. His ideal American speech allows for dialects, picturesque diversity, and characteristic individual asperities. But notice. He demands that this speech shall be the expression of sincere and sturdy thinking, the voice of high wisdom, the utterance of the best in American character. And the best in American character is the idealism fought for on the battle fields of France.

Do we ask, What is this idealism, this mystic something which we want our language to symbolize? I'm not sure that I know, and I am certain that I cannot phrase it in words. But I think it isn't the genius of our Franklins and Edisons; it isn't the statesmanship of our Washingtons and Wilsons; it isn't the poetry of our Poes and Whitmans; it isn't the philosophy of our Jameses and Emersons. Let me say it is an aspiration, a spirit, a constant groping for the thing that is better, a reach that exceeds our grasp.

And one of the things for which we are reaching is a language that is clean, that is noble, that is vibrant with life. This we want because we believe it can bind together a people's different races, creeds, conditions, and aspirations. This we want because we believe that blood alone does not determine the destiny of a nation. This we want because we believe that a man becomes the part

he plays in his social environment; that the work which he does, the games that he plays, and above all the language that he hears and speaks will foster an ideal that will master his blood. If we can satisfy this want we shall lift the individual out of self into fellowship, out of triumph into dedication. We shall have taken the initial step in bringing that harmony within our country which will give it meaning, purpose, and cohesion.

And so I come to my close. I began by saying that our language was a matter for smiles and tears. Far from smiles these final paragraphs of mine—until you take them too—solemnly. Once before I had Don Quixote point a moral. Let him do so again. You remember that he was mad; that he was old, battered, and ridiculous, but that he was the soul of honor; and because of it we followed him like the ghost of our better selves. We smiled at his discomfitures, conscious all the while that we would not have had him be a perfect Sir Galahad; and we had besides a shrewd suspicion that he was the only kind of Sir Galahad there could ever be in this world. At the same time it did us good to see the courage of his idealism, the ingenuity of his wit, the simplicity of his goodness.

Isn't it very much like that with oral English? I think it is. Like Don Quixote, it is adventuring with strange opponents. It is often unbalanced; it is old, unkempt, and often ridiculous; but in it breathes the soul of our ideals, and because of that we love it as the spirit of our better selves. We smile at its foibles and idiosyncrasies, always conscious that we would not have it perfect; and we feel, besides, that it is about as perfect as any living language can be. At the same time we rejoice at its effort toward something better, at its capacity for growth, at the simplicity of its verbal strength. Our language a matter for smiles and tears? Yes, I think it is. For it is largely a question of our quiddity.

Owing to the inability of Miss McKinney to be present, the report of the committee on "Minimum Essentials" was not presented. Upon motion of Professor Paul the committee was continued for another year, with assurance of the Association's appreciation of the work the committee has already done.

Mr. Widger of Charleston then presented the report of the committee on "Training in American Ideals." This committee made six recommendations: (1) American ideals should not be taught in separate courses labeled "Ideals," but in connection with the study of American classics, because, in the opinion of the committee, the best repository of these ideals is the written words of the greatest Americans of the last century. (2) There should be separate courses in American literature, because of its distinctive qualities as compared with English literature. (3) American literature should be invariably a required and no longer an elective subject. (4) Extensive reading should be encouraged. Every school should possess a library. (5) There should be more extensive use of current periodicals in the attempt to show the application of social ideals to modern life. (6) Respect should be cultivated for our heritage of English speech. Mr. Widger's paper follows.

Report of Committee on Training in American Ideals

The committee whose report I have the honor to submit was appointed last winter by the executive committee of this association. At that time our nation was actively engaged in war with the Central Powers; and the war

was revealing, as nothing had done for decades, the vital importance of a widespread understanding and appreciation of and wholesome respect for the ideals of life and the institutions by which our life was being ordered and governed. We were told that America had drawn the sword because the ideals of life and government which she cherished were threatened by the selfish ambitions of Germany. As a result of these facts, we were in a mood to search ourselves as never before to discover just what it was so precious that our young men were gladly willing to lay down their lives to preserve. And if it were possible to discover this, we naturally wished the knowledge made as nearly the possession of all as possible.

Moreover, it was even then apparent that when the war was over and peace once again among us, the need of clearly comprehending that which is best and noblest in American culture would still remain; for it was evident even then that this nation would play no minor part in shaping the world which would rise from the bloodshed and destruction of the war.

"Peace hath her victories

No less renowned than war; new foes arise"—sang Milton. We needed to know the best in American life and to spread broadcast a deep love for it. Consequently, this committee was created to find out what might be done through the teaching of the English language to arouse a deeper and broader understanding of American ideals.

The subject of ideals is one on which so much mushy sentimentality has been uttered that your committee has striven to keep at least one foot on the ground and to approach it in as definite and helpful a way as possible.

There were two things which had to be decided upon rather early by the committee, namely, (1) the scope of the committee's work, and (2) the manner in which it would be undertaken. Inasmuch as this is an Association of Teachers of English, we decided to confine the investigation to the teaching of ideals of English. We would remind you that the teaching of American ideals is not a monopoly possessed by English teachers. Rather it is a privilege and a responsibility belonging to the teachers of all subjects, yet a task in which the teachers of English have a distinct and important part.

With this limitation imposed upon us by the very character of the association, we proceeded to formulate the aims of the committee's investigation. The aims decided upon can be expressed in three statements. First, we wished to find out what the high schools in this state were now doing toward teaching what they considered American ideals directly or indirectly in the English classes. Second, we wished to discover what ideals of America the teachers thought it desirable and possible to teach in this way. Third, we hoped that we might by a study of such information and other sources, be able to make some definitely helpful suggestions or recommendations.

As the only feasible way of finding out what the various high schools in the state were doing in this matter was through letters of inquiry, we formulated a series of questions which called for facts and opinions and mailed them to the principals of high schools and asked them to have the questions answered and returned to the committee. Four hundred and forty-five letters were sent, from which the committee received one hundred six replies. That is, approximately, twenty-one per cent of the principals addressed did what they were asked for.

All but two of the one hundred six schools replying thought that the English class could profitably be used for creating a better understanding of American and Allied ideals. One of the two exceptions qualified the answer by saying that this was true only of "general ideals." The other exception remarked that he thought this could be done, but that he would not "devote all the time to it." With this latter statement the committee is in complete agreement. Eighty-five schools stated that they were making a "distinct

effort" in English classes to teach American ideals. The methods used in doing this might be grouped under five heads.

1. Through emphasizing the ideals of various writers whose works were studied in English or American classics. In this way it was believed that some general ideas of what English and American culture stood for were slowly evolving in the minds of the pupils.

2. Through using in connection with the regular classic some special book setting forth the ideals of the statesmen and thinkers of today. For instance, the three most frequently mentioned books of this kind were: "Democracy Today," "The Forum of Democracy," "American Ideals."

3. Through frequent lessons spent in reviewing current war poetry and fiction. In some schools scrapbooks of modern poetry were made by the classes. Lessons of this kind were only occasional.

4. Through the use of current magazines and periodicals to furnish material for oral and written composition. The comment was made by some schools that they found this a useful method of getting pupils to have something to say.

5. Through the use of books for supplementary or reference purposes. Reading from these books was usually done voluntarily by the students through interest, but in some cases the work was required. These books were usually selected because they exhibited definite customs and ideals of English and American life or because they gave interesting information or points of view about the war itself.

Twelve schools gave a qualified answer to the question, "Is your school making a distinct effort to teach American ideals in the English class?" saying that they were making no effort except in the teaching of literature. Eight schools gave no answer at all.

To the question, "Does your school offer a separate course or courses in American Literature?" eighty-five answered "Yes," and twenty-one "No." It was usually the case that the schools answering "No" were the small high schools where it may be assumed that the difficulties of curriculum or lack of teachers was largely responsible. To this, however, there were four notable exceptions. Two large high schools in Chicago had no such courses and two schools in large cities outside of Chicago had no American Literature course. Among the twenty-one high schools having no American Literature course four were organizing such a course to be given in the school year 1918-1919. Reduced to percentages the replies showed that approximately nineteen per cent of the one hundred six schools had no course or courses in American Literature. To the committee this seemed a regretable fact.

Replies to the question as to the use made of war subjects in oral or written compositions showed that in a large majority of cases this was the common practice, usually because the pupils naturally turned to such topics. In some schools, on the other hand, writing on these topics was required every so often. In this connection fifty-two schools stated that they required all the pupils in some of their English classes to subscribe for some weekly or monthly periodical. The papers mentioned in the order of frequency were as follows: The Independent, The Literary Digest, Current History, The Outlook, Review of Reviews, Atlantic Monthly, New Republic. One interesting answer was to the effect that pupils were required to take The Literary Digest in the history class but that no use was made of it for English.

Perhaps the most discouraging fact revealed, at least from the committee's point of view, was this: that fifty-eight of the one hundred six schools replying had absolutely no war books in their school library. Some of these, however, reported that the pupils had access to the town or city library where such books could be obtained. The most frequent comment made by the schools having no such books was, "We have no money for such purposes." One teacher remarked that they had no such books as he was "uncertain about much of the stuff"—a point of view with which it would be easy to agree,

but one which in your committee's judgment would not justify the absolute exclusion of war books from the library. Very few indeed of the schools gave any indication that they had a really adequate collection of books on the war. Only thirty-two schools were subscribing for the publications of the Committee on Public Information.

Fifty-five out of the one hundred six schools reported that the programmes of the literary or debating societies were being used "for furthering an interest in the war or the peace to follow." Most of the fifty-one schools which did not attempt this were schools which had no such societies. It was interesting to learn what some of these literary societies were doing. One school said that "practically every programme in the last two years has been a patriotic programme." Others were more modest and confessed to only two such programmes a month, while others had but one a month. Some societies have had outside speakers; others have organized "four minute" speakers' teams. One school remarked that war topics were popular in the Story Club. Another school has given a play dealing with some aspect of the war. Several societies demonstrated their patriotism in a very practical way by disbanding and organizing themselves into corps of Red Cross workers.

The question to which the most interesting replies were given was this: "What ideals of America or her Allies do you believe should be taught through the English classes?" There were almost as many different replies as there were people who answered. Among the most challenging were the following:

Individual Responsibility in a Democracy
Universal Education
Intelligence
Appreciation of and Sympathy for other Races and Nationalities
Fair Play and Justice
A Big International Type of Patriotism
Civic Pride
Public and Private Morality
Industry and Thrift
Equal Rights for All (both men and women)
Personal Initiative
A Common Language.

It might be helpful to think of these ideals as either (1) political, (2) social, (3) personal. Some such classification might help in deciding what ideals a piece of literature set forth.

As the result of its investigation and study the committee has reached the following conclusions about the teaching of American ideals:

First, the ideals of America and her Allies can best be taught not in separate courses labeled "ideals" but in connection with the regular work of the English classes. We do not believe that the teaching of these ideals calls for any radical departure from our present method of teaching English. It demands only a deeper consciousness of the meaning of literature which is taught and perhaps a slight change in the emphasis of such teaching. Better teaching of that which we have always taught is a possibility of doing our duty in teaching American ideals.

Second, as ideals are things of growth and are constantly being modified to meet new conditions, the literature of the past in which present ideals have their origin and roots should be studied as well as the literature of the present. The literature of a nation is the most permanent record of the best thoughts and aspirations of that nation. Hence we must look to literature as the repository of that which is noblest in American civilization. In the "literature of power," to use De Quincey's distinction, may be found the finest expression of personal and social ideals. We believe that the teaching of literature affords one of the greatest opportunities for emphasizing those ideals which make for national greatness.

Third, we urge the adoption of separate courses in American Literature whenever it is possible to do so. While the likenesses between English and American literature are vastly more important and fundamental than the differences, nevertheless there are certain differences and characteristics of America which can best be observed when the literature of America is isolated and the attention centered upon it alone. "Cursed be he that removeth his neighbor's land mark," said the writer of Deuteronomy. We further urge that completion of a course in American Literature of not less than one semester be required for graduation from all four year high schools. It is now a common practice to put the course in American Literature in the junior or more probably in the senior year and to make it an elective, with the result that even in schools where such courses are offered there are many students graduating who have no clear knowledge of American literature. Is it too much to ask that a knowledge of this literature be required of high school graduates, a large number of whom will never find another opportunity to study this field? They become citizens without a foundation in the spirit and traditions of America as expressed in her literature. On this point we quote from Percy H. Boynton's address on "Literature in the Light of the War," delivered last year before the National Council of Teachers of English:

"To fasten in a whole generation some recognition of other qualities in America than its bigness, and of other distinctions between the past and the present than distance between them is to contribute toward the consciousness of a national individuality which is the first essential of any useful membership in the community of nations."

Fourth, we urge that an effort be made to secure as extensive reading in literature as possible. This means that every high school should have a library adequately supported by school authorities. Such a library besides the classic and standard works should contain modern fiction, poetry, essay, drama, and history, each of which furnishes a criticism of contemporary life and ideals. If the teaching of English literature is to be of any permanent value it should furnish high school students standards by means of which they can determine by themselves whether a book is a bad book or a good book, "A book for the hour, or a book for all time."

Fifth, as a means of further keeping in touch with current thought and opinion, we urge that the practice of having English classes use current periodicals be encouraged and the practice extended where it is not now found. Such literature offers the opportunity to see how political and social ideals are being applied to new conditions or are being modified by them.

Sixth, we emphatically urge that the great goal of our teaching in English should be the creation of a feeling of respect for the English language to the end that it may serve as a basis for a better understanding of our own nation and the whole English speaking race as well. The bond of a common language and a common literary tradition is strong guarantee of friendship. Without such a feeling for our mother tongue the study of ideals cannot have its highest value. "One flag, one country, one language."

This concludes our report, to which, however, we have appended (1) a list of books dealing with the war which in our judgment a high school boy or girl could read with profit, (2) a list of magazines and periodicals especially suitable for class use or for reference work—as expressing usually in good form—thoughtful and worth while opinions. (3) a brief list of American authors and works with what customs or ideals of American life they best exhibit.

Respectfully submitted,

H. DeF. Widger,

Florence V. Skeffington.

APPENDIX I

Books Dealing with the War

Personal Narratives

1. My Four Years in Germany.....Ambassador Gerard.....Doran
2. The Student in Arms (1st Series).Donald Hankey.....Dutton
3. The Student in Arms (2d Series)..Donald Hankey.....Dutton
4. Kitchener's Mob .....James Norman Hall...Houghton Mifflin
5. The First One Hundred Thousand.Ian Hay .....Houghton Mifflin
6. A Hilltop on the Marne.....Mildred Aldrich .....Houghton Mifflin
7. In the Edge of the War Zone.....Mildred Aldrich .....Houghton Mifflin
8. Carry On .....Coningsby Dawson.John Lane Company
9. The Glory of the Trenches.....Coningsby Dawson.John Lane Company
10. Ambulance No. 10.....Leslie Buswell.....Houghton Mifflin
11. Over the Top.....Arthur G. Empey..G. P. Putnam's Sons
12. Under Fire .....Henri Barbusse.....
13. Adventures of Private Peat.....Private Peat .....
14. Outwitting the Hun.....O'Brien .....
15. Out to Win.....Coningsby Dawson .....

Fiction

16. Mr. Brittling Sees It Through.....H. G. Wells.....Macmillan
17. Changing Winds .....St. John G. Ervine.....Macmillan
18. Sonia .....Stephen McKerma.....Doran
19. The White Morning .....Gertrude Atherton.....Stokes
20. The Tree of Heaven .....May Sinclair .....Macmillan
21. Christine .....Alice Cholmondeley.....Macmillan

Poetry

22. A Treasury of War Poetry.....Geo. Herbert Clark Houghton Mifflin
23. Poems of the Great War..... Macmillan
24. Verse on the Great War.....(W. R. Wheeler, editor) Yale Univ. Press
25. The Spirit of Democracy.....Powell & Powell.....Rand McNally
26. Reading Aloud: War Time Suggestions .....John M. Clapp, (Free Bulletin Eastern Illinois Normal School, Charleston.)

Books for Class or Reference Work

27. Democracy Today.....Gauss .....Scott Foresman & Co.
28. The Forum of Democracy.....Allyn & Bacon
29. The Spirit of Democracy.....Powell & Powell.....Rand McNally
30. War Addresses of Pres. Wilson...Ed. by Leonard.....Ginn & Company
31. Addresses of Pres. Wilson.....Geo. McLean Harper..Holt & Company
32. American Ideals.....Foerster & Pierson .Houghton Mifflin
33. National Ideals as Expressed in the Literatures and Philosophies of the Warring Peoples. S. A. T. C. Text. (Harvard Univ. Press.) Ready in March, 1919.
34. The Foreign Policy of Pres. Wilson .....Robinson & West.....Macmillan
35. Liberty, Peace, and Justice.....R. L. S.....Houghton Mifflin
36. Promoting Good Citizenship.....Viscount Bryce (Riverside Lit. Series Number 227)
37. Yale Lectures on the Responsibilities of Citizenship—A series of volumes containing the Dodge Lectures by distinguished men. (Yale Univ. Press.) The series includes:
38. (a) America in the Making.....Rev. Lyman Abbott

39. (b) The Hindrances of Good Citizenship .....Viscount Bryce
40. (c) The Conditions of Progress in Democratic Government....Charles E. Hughes
41. (d) American Citizenship.....David J. Brewer
42. (e) The Citizen in His Relation to the Industrial Situation.....Rev. Henry C. Potter
43. (f) Freedom and Responsibility..Arthur T. Hadley
44. (g) The Citizen's Part in Government .....Elihu Root
45. (h) Four Aspects of Civic Duty..William H. Taft
46. (i) The Relation of Education to Citizenship .....Simeon E. Baldwin
47. National Ideals in British and American Literature Pamphlet of Univ. North Carolina—War Information Series No. 14—30c.
48. American Ideals in American Literature .....Edwin Mims Univ. North Carolina Bulletin, War Information Series No. 12—10c.

APPENDIX II

PERIODICALS RECOMMENDED BY THE COMMITTEE FOR USE BY ENGLISH CLASSES

The Literary Digest
The Independent
The Outlook
The Atlantic Monthly
The Review of Reviews
Current History
} For use in class

The New Republic
The Nation
The Dial
The Living Age (A magazine of British opinion)

APPENDIX III

AMERICAN AUTHORS WHOSE WORKS EXHIBIT SOME PHASE OF AMERICAN LIFE OR CULTURE

George Washington—*The Farewell Address*—This address states a political policy which has had a tremendous influence upon our domestic and foreign policies. Its foreign policy serves as a valuable contrast to our present policy.

Benjamin Franklin—*Autobiography*—This work serves to show the value of personal effort and perseverance, thrift, industry and common sense. Incidentally it gives a good picture of life in Philadelphia in Franklin's times.

Washington Irving—*The Sketch Book*—This is interesting largely as an American's interpretation of English life and customs. *Knickerbocker's History of New York, Rip Van Winkle,* and *The Legend of Sleepy Hollow* give a vivid picture and the atmosphere of the Dutch settlement in New York.

William Cullen Bryant—*Poems*—These show a typical American love for nature and besides exhibit New England life and thought.

James Fenimore Cooper—*The Spy, The Pilot, and the Leather-Stocking Tales* show aspects of early pioneer life.

Daniel Webster—*Speeches*—Nothing in American Literature emphasizes more the need of national solidarity.

Nathaniel Hawthorne—*Novels and Twice Told Tales.* Hawthorne's novels show the effect of sin on human life—even to the last generation. Puritan life and superstitions are prominent in the *Twice Told Tales.*

Henry W. Longfellow—*Poems*—Longfellow is a poet of the home. He has also brought us into lively sympathy with incidents or phases of early life in *Evangeline, Miles Standish, Hiawatha. The Building of the Ship* states an ideal for the nation.

John Greenleaf Whittier—*Snowbound and other poems. Snowbound* exhibits the simplicity and beauty of New England rural life. The Anti-slavery poems express a hatred of oppression and bondage.

Ralph Waldo Emerson—*Essays and Poems*—In *Self Reliance* as well as in *Compensation* and other essays Emerson shows the freedom of the individual and the consequent individual responsibility.

James Russell Lowell—*The Vision of Sir Launfal* and other poems and essays. Lowell was an exponent of democracy. In the *Commemoration Ode* he expressed a belief in a nationalism that was bigger than any sectionalism. He is a firm believer in national righteousness.

Abraham Lincoln—*Speeches, Papers and Letters*—Lincoln exhibits a broad spirit of charity that has been an ideal of America's dealings with other nations. He exhibits another trait worthy of idealizing, namely, the ability to see without bias both sides of a question.

Oliver Wendell Holmes—*The Autocrat of the Breakfast Table*—Holmes represents New England at its best. He illustrates Yankee humor and shrewdness.

Walt Whitman—*Poems*—Whitman glorifies the common man and shows a vision of a brotherhood that is more than national. His poems of the Civil War exhibit a broad sympathy.

Harriet Beecher Stowe—*Uncle Tom's Cabin*—This Novel shows hatred of slavery and cruelty.

Brete Harte—*Stories*—These give splendid glimpses of early Western life—especially California life in the gold craze period.

Henry David Thoreau—*Walden and other essays*—Thoreau shows a love for a simple outdoor life.

Francis Parkman—*Historical Narratives*—These vivify the pioneer life.

John Burroughs—*Essays*—These show a love of nature and wild life.

William Cullen Bryant John Greenleaf Whittier Nathaniel Hawthorne Oliver Wendell Holmes Sarah Orne Jewett Mary Freeman Wilkins Robert Frost	New England Life
Joel Chandler Harris Thomas Nelson Page F. Hopkinson Smith John Fox Joe Owen Wister George W. Cable Sidney Lanier	Southern Life
Edward Eggleston James Whitcomb Riley Mark Twain Booth Tarkington Edgar Lee Masters	Middle Western Life

Owen Wister Brete Harte Joaquin Miller Parkman Jane Grey	Western Life
Robert Herrick Frank Norris Booth Tarkington	Industrial Life
Winston Churchill Ernest Poole Edith Wharton	Social and Religious Life
O. Henry Clyde Fitch Ernest Poole Walt Whitman	New York City Life

Professor Sherman of the University followed with a discussion of "The English Teacher and the War." In this paper he showed how at the University this year an attempt had been made in the War Issues course to apply some of the principles that Mr. Widger's committee had advocated. [This paper was received with great appreciation by the members present. Owing to the fact, however, that the outlines proposed were based largely upon the prevailing war conditions it is not thought desirable to publish the paper until it has been very materially modified as to viewpoint. It is therefore omitted from the proceedings by request of the writer.] Upon the conclusion of Professor Sherman's paper, Professor Paul moved that Mr. Widger's committee be asked to consider the possibility of establishing such a course in the high school.

The nominating committee presented its report, naming for President, Superintendent J. O. Huff of Abingdon; for Secretary, E. C. Baldwin of the University; for Treasurer, Mrs. B. S. Abernathy of Pontiac; as Chairman of the Executive Committee, H. D. Widger of Charleston; and as other members of the Executive Committee, A. F. Trams of Joliet (term expiring 1919); B. S. Richardson of Alton (term expiring 1920); Miss Alice Bidwell of Freeport (term expiring 1921); and Miss Bess East of Champaign (term expiring 1921). These nominations were acted upon favorably by the Association.

Professor Paul then conducted a discussion of the methods employed by various teachers during the last year in eleven selected high schools of the state to improve the speaking of their pupils. The following questions were used to elicit responses.

An Experiment in Better Every-day English

I Attitude of the teachers of English in your school toward taking up this project?

II Attitude of teachers of other subjects? Was their cooperation more than nominal?

III How was the scheme presented to the pupils? in general assembly? in English classes? other ways?

IV What devices, if any, were used in presenting the plan and in trying to enlist student interest and cooperation?

V Ways and means of conducting the campaign, e. g., talks to classes by teachers; oral composition or themes; articles in school paper; posters; plays; good English clubs; competitions among students, etc.

VI How long was the campaign carried on? What has been done to follow up the work?

VII Was any attempt made to interest agencies outside of the school, such as the homes, newspapers, local clubs, etc?

VIII Attitude of students toward the campaign?

IX Results obtained; proportionate to the effort involved? Is the experiment worth trying throughout the state?

X If so,—suggestions for carrying it on effectively.

Following this discussion, the Association adjourned to meet in joint session with the Modern Language Section.

In one way the eleventh annual meeting was highly gratifying by reason of the relatively large number of University students who attended. It was a matter for regret, however, that so many of the high school teachers who in former years had contributed to the helpfulness of the discussions were prevented by illness or other causes from attending.

E. C. Baldwin, *Secretary.*

9. Geography Section

The Geography Section was called to order by the Chairman, Mr. W. E. Andrews, and the first two topics of the program were given. The third speaker failed to appear. The first subject, "The Status of Physiography Teaching in Illinois High Schools" was given by Principal F. W. Cox, of Flora.

The Status of Physiography in Illinois High Schools

A desire was expressed, at a meeting of the Geography Committee of the High School Conference, to have ascertained, in some way, the status of physiography in the high schools of Illinois. Two ways of gaining the desired information were suggested. The first way was through the sending of a questionnaire, and the second was through the examination of the records of the office of the High School Visitor. It was decided to use both methods. Since the speaker on account of a previous experience with a questionnaire on the same subject, strongly advocated the second method, the duty of examining the records was thrust upon him. A perusal of the program sent out a short time ago reveals that for some reason the other method has not been employed. Therefore the following consists of such information as an examination of the records of the office of the High School Visitor reveals.

Since only two days were available for the examination of the records, it was thought best to select at first a smaller group, and if time remained, to extend the examination to a larger group. Accordingly public high schools belonging to the North Central Association, with the exception of the Chicago schools, were examined, and want of time prevented the examination from going farther.

The number of records examined was one hundred twenty. Ninety-four of these were reports for 1917-18. The first question for investigation is, How long is the course in physiography?

Sixty schools give geography for one semester; 11 schools give geography for one year; 49 schools give no physiography.

Of those that give no physiography, 31 give general science. Only a few schools give both physiography and general science. The second question is, How many of those giving physiography give laboratory work?

Twenty-six give laboratory work; 39 give no laboratory work.

In the case of six schools it was impossible to determine whether laboratory work was given or not.

In what year of the course is physiography given?

Sixty-one give it in the first year; three give it in the second year; one gives it in the first or second; one gives it in the second or third; one gives it in the second, third or fourth. In the case of four schools it was impossible to determine.

The fourth question is, What is the main subject of the teacher?

Physical geography in 14 schools; physics in eight schools; chemistry in eight schools; science in one school; botany in three schools; manual training in one school; Latin in four schools; zoology in seven schools; biology in four schools; domestic science in four schools; methods in one school; English in seven schools; physiology in one school; typewriting in one school; mathematics in three schools; agriculture in two schools; civics in two schools; commercial geography in one school; French in one school.

The fifth question is, What other subjects are taught by the teacher who teaches physiography?

History, general science, algebra, commercial arithmetic, zoology, geometry, penmanship, spelling, domestic science, English, physiology, physics, commercial geography, chemistry, military drill, industrial science, economics, agriculture, French, stenography, botany, typewriting, civics, business methods.

The general conclusions are that physiography is a 9th grade subject, usually given for one semester. During the past few years, there has been a tendency to replace it with general science. In almost every case where general science is now given, an examination of the record of preceding years shows a time when physiography was discontinued and general science was substituted. Less than half the schools giving physiography give laboratory work. The subject is seldom taught by one whose chief interest is the subject. In many cases the chief interest is not even in science. Teachers of such subjects as stenography, Latin and domestic science are holding recitations in physiography. It is evident that the curriculum makers of our high schools pay little attention to the importance of physiography.

The second subject, "The Aims of Teaching High School Geography" was given by Principal W. E. Andrews of Pana.

The Aims in Teaching High School Geography

Participants in a parade often gain little knowledge of the movements involved throughout their line of march; only by becoming a bystander, and taking a position favorable for observation, can the actual happenings be witnessed.

The following are some of the things which such a bystander may see while beholding the spectacle of the rise of geography in the high schools:

1. The early texts, Appleton's for example, were the product of a corps of editorial experts, each vying to outdo the others in the choice, arrangement, and treatment of the subject matter. Discoursive exposition ruthlessly disregarded the juvenile mind. Erudition impeded both teaching and learning. Doctrinal presentation by eminent specialists swept aside every hand-hold for the pupils to seize. High school geography could not be taught with such aids.

2. The next spectacle presented, of a clearly marked type, was the rise of the descriptive treatment. Emphasis, during this phase, stressed the presentation of geographical facts in considerable abundance, and in accordance with an orderly plan which was intended to reveal the relations involved. The ruthless epoch waned under its remedial successor. Pupils were regaled with information which was unfolded so as to reveal causes and consequences, associated facts and the relationships responsible for the assemblages. High school geography waxed under this regime.

3. Next came a reaction. Science became assertive. Information gleaned through reading, even when under the guidance of teachers, was not science. Rallying to their support the last-born of the household of method—the laboratory as a substitute for the printed page—a new seizure of geography in the high schools was perpetrated. What actually happened was this: Just as in the early attempts at teaching the English language in the high schools, the avowed purpose was to use the language to illustrate the laws and principles of grammar. Some survive who passed through this travesty in teaching. Pope's "Essay on Man" and Milton's "Paradise Lost" were analyzed and parsed. Like an enthusiastic body of archæologists the pupils worked over the priceless coal-field just for the purpose of finding primeval vestiges there, with never a thought of converting the coal into kilowatts for the energizing of civilization; so they mined and quarried their way through those treasure-stores in order to secure a charm-string collection of grammatical specimens. Pope and Milton wrote to exhibit material from which selections were to be made to illustrate the principles of grammar.

So the new epoch of high school geography was ushered in with authoritative declarations that the class-room and the study-room must give place to the laboratory. Books were to be replaced with work tables upon which were to be spread the source materials of geography. Equipped with the appropriate collector's vasculum—the note book—the pupils surveyed the spread and occupied the double periods in making judicious collections for their receptacles. High school geography had passed well into its third phase: Using the geography materials to exemplify the laboratory method of investigation.

It is not possible to say whether this is the stage which we are in at present. Certainly, just as it was clearly seen long since, that the learning mind cannot easily assimilate the perfected organization of material which erudition presents discoursively, it is now as clearly seen that the learning mind is even more non-plussed by the array placed upon the laboratory table.

It has not been demonstrated that high school geography is a laboratory subject. Some of the official heads say without reservation that physiography cannot be got into the laboratory, and that the substitution of table work with maps for real activity in learning matters of human interest has sterilized the class-room.

Thus high school geography has passed through three clearly marked phases: erudition had its turn; exposition then had its tryout; exemplification assumed control: then came the fourth stage.

4. The crisis for high school geography started when physiography had begun to be buffeted about to be taught by the high school teacher who was the latest comer in the staff, and who, therefore, could not refuse to teach any addition to her quota, however unpleasant the foundling might actually be.

Furthermore, laboratory excesses had sickened the patient; the history teacher had found it necessary to institute the teaching of some of the essentials of high school geography in the history classes; and even the commercial teacher had risen to the needs of the commercial department and had begun a similar practice in order to strengthen the commercial courses. Very soon high school geography had become an international Poland.

At this juncture vocational subjects were clamoring for places in the high school program. Through lack of adequate administrative sagacity in providing a school program whose design would include competent care of the new aspirants for position in the plan, place was asked for by silencing certain subjects; namely, those whose advocates were more than willing to have disappear from the high school program. Physiography then began to disappear. It is true that some still cherish the faith that it should remain as a significant member of the program, but its worst friends dictated inconsequential position as a two weeks course among an indeterminate number of humiliated abbreviations similarly short of their pride of ancestry and associates. A strikingly seductive caption lent some charm to the lean remnants of former glory.

It is this crisis which advocates of geography in the high schools now face. Shall we provide a respectable funeral, or shall we determine to institute geography as a major department in each high school whose size will warrant it?

The advocates of the funeral have already engaged the undertaking services of general science. Whether they succeed in carrying out their intentions of forcing the obsequies in advance of the demise will be determined by the activity of those who believe that geography is a high school subject of first rank.

Concerted efforts must be made to reinstate this, the richest of all subjects, with the recognition and prestige of a high school department. The disjecta membra are to be reassembled and rehabilitated. The head—physiography—is to be reclaimed from the unwilling teacher upon whom it has been forced; the trunk—commercial geography—is to be redeemed from the commercial department where it has been enslaved; and the limbs—fragments of geography made use of by the teachers of history—are to be returned to their belongings. Then will high school geography have come into its own.

It is high time for this action. Delay, while financially interested authors and publishers are active in getting business, will be fatal to the cause. In the face of the interests, a geography drive must be made for the redemption of the subject, and for instituting a department of geography in every high school of warrantable size.

In the proceedings of the University of Illinois High School Conference for the year 1915, pages 212-214, are to be found the first steps that have been made which look toward adequate recognition of the worth of high school geography as a subject of major importance. In the proceedings for the year 1916, pages 173-175, is to be found the report of the conference committee assigned to prepare a syllabus of an advanced course in high school geography. In the proceedings for the year 1917, pages 184-222, the resulting syllabus is printed in full as presented and adopted by the geography section.

What is the warrant for this move? Why should the study of geography be continued in the high school grades? What purposes in the great aim of education are served by high school geography? Is geography necessary for securing this necessary part of high school education?

There are two approaches to answers to these questions:

1. All recognize the profound importance and the marvelous applications of the doctrine of apperception in the school room. Its formulation, elucidation, and diffusion by the masters, and its immediate application by the normal training schools worked almost a miracle in transforming teaching. The antedating doctrines of self-activity and of sympathetic consideration of childhood scarcely exerted a greater influence.

The still later doctrine of felt needs, as necessary motives for learning, is destined to revolutionize teaching even as much, if not more, than those of Froebel, Pestalozzi, and Herbart. No teacher is qualified to teach any class unless that teacher is alive to the aim of education, and to the special functions of the subject taught in furthering that aim. The pupils must know what gains will accrue to them as a compensation for the efforts expended by them upon the assignments. Without this realization, and its inherent expectancy of personal gain, educational lethargy results. Teaching cannot expect to avail through its abundancy of givings, when those who are present to receive see nothing worth their while to take. The first requisite in teaching is to create the realization of felt needs, not to assume it, and neglect it.

Now, if in a casual meeting of high school teachers, and often in an official meeting, the question is raised: What is the aim of high school education, and what use are you making of the subject which you teach to realize that aim, consternation is apt to become epidemic. Neither at their tongue's end, nor in their technique's skill is the answer ready. The scene is strikingly duplicated when you go, one by one, to their class-rooms and ask the pupils there: What aims definitely have you in mind in studying this subject? Shades of Columbia University! Here are pupils in full pursuit of something, and under the guidance of teachers who are leading them to their goal; but neither the guides nor the followers know what they are after! Hence the recourse to substitutes in the high schools. "Pep" is enshrined in the sanctuary of popular education, and scholarship, for which the high school is founded and maintained, is relegated to an inconsequential rank. Sports and snobbery dominate while that for which the people voted when they obligated themselves to the debt in behalf of educating their youths, may be seen only occasionally, and then in sickly pallor. The ark of the covenant has fallen into heathen hands!

Clearly it is time for instituting definite realization of the aim of education, and of the part played by the particular subject in the furtherance of that aim in every class and class-room. The appealing quality of the teacher's offering in the assignments and personal service, if it avail, must issue from the pupil's realization of what there is in it for him. Things deemed most worth while are given precedence at the pupil's door through which all must pass to gain admission into his mind and character. Hence the importance of facility, on the part of the teacher, in making the subject an agency in instilling a sense of felt needs and for gratifying the desires awakened.

The masters have presented to us the aim of education. It is our first duty to make these contributions our own facile instruments for class-room procedure. Socrates has contributed the famous Athenian aim that, for twenty-four centuries, has maintained the wonder and admiration of mankind. This is it: To have given the human soul, as its just due, all the beauty and worth possible for it to attain and achieve, is to be educated. In a moment of sublime exaltation he said: Grant me to be beautiful in the inner soul; and all that I have of outward things grant them to be in full harmony with those within. May I count the wise man alone rich. May my own store of possessions be such as none but the good may own. No one can phrase the aim of education better than this which exalts attitude, wisdom, and personal goodness as the essentials.

About 1650 John Milton characterized education as that which fits a man to perform justly, skillfully, and magnanimously, all the duties, both public and private, of peace and of war.

Current statements of the aim of education stress social efficiency. This has lately been said to mean the living the strongest, happiest, and most useful life here and now. The attainment of this aim includes (1) the acquisition of fruitful, as contrasted with useless, knowledge; (2) the cultivation of the right attitudes, interests, ideals, standards, enthusiasms, desires, aversions, appreciations, and habits, or the attainment of a true sense of life's values; and

(3) the training of a reasonably wide range of skills, or the creation of capacity for control and achievement. (Betts.)

Whatever the phrasing may be, there must be a purpose toward which there must be team-work in striving between the high school teacher and his pupils. Let the goal be well marked out. The subject must be the course to the proposed destination. Curricula and courses resound to that idea.

2. Getting born into this world is not a mere single birthday incident. Advent into the phase of pulmonary respiration is not all there is in entering life. The development and maturing of other bodily structures besides the lungs mark equally prodigious birthdays. In that marvelous labyrinth of tissue, whose functioning we are wont to call mind, what epochal developments successively transpire! The mind, clearly, grows by what it feeds upon. Now when this multi-born organism—styled high school pupil—almost daily during the high school years of its life, emerges from new natal barriers into new ideal worlds and remains now in this youth-fold, now in that, nestles in the class-room, what is to be done? Certainly, merely imparting knowledge will not suffice.

Who of the readers of this cannot recall the recurrence of these near-births when there surges from within an echoing response to a consequential thought from without? An example will make plain one type. For two days a generation ago a boy had, with horse and rail, raked straw during the threshing in September. The work was done. The threshed wheat had been removed from the field. The machine and the old horse power had been removed also. On the third day this boy had strolled out to the site where the noise of machinery and the labor of men had attached a new meaning to the premises. Only vestiges remained. The men had gone. Silence and leavings alone marked the site. Thrice was the boy reminded that he was among but the leavings, when the chaff pile reinforced the idea that what was most worth while had been taken from the site. Should he also remain on the farm with the leavings? Or should he go to those centers where the values were accumulating? No natal first oxygen ever signified more to new lungs than did that idea to the mind and character of that boy. He followed in the path which the values were wont to take.

Another instance of the ever recurring birthdays during the lurching of education is this: Once when Enoch A. Gastman was a youth in attendance at the Normal School at Normal, Illinois, he was passed in the corridor by one of his teachers. Some prompting caused this teacher to remark impressively: "Gastman! Get an education." Those who have heard this incident related from the lips of the man whose life it overwhelmingly shaped can never doubt that ideas are as cogent as oxygen in instituting ever recurring birthdays.

What a large and important part is played by geography in this advent after advent into newer and newer regions from infancy through childhood, and on when the outer world begins to come in with its grand rush during the high school period of development. First the rooms of the house in which the child was born constitute its world. The widening spirit next appropriates the neighborhood as fast or faster than its acquaintance progresses. Then the school awakens and fosters the geographic ideas which gradually eventuate in a realization that the whole earth-ball after all is the home of man.

Shall the high school withhold its ministering service in this great awakening? Just when adolescence is voraciously clamoring with an enlarging attitude toward the realities of the whole world, shall the subject which offers most to the increasing interests, to the multiplying needs, to the prolific activities, be silenced? Shall the high school pupil, with capacity and aspiration for world-wide citizenship, be left to narrowing provincialism? If history can bring forth from its archives indispensable prerequisites for training the adolescent, much more can its sister-servant—geography—bring! If the material sciences yield their votive offering to this worthy cause, much more can their sister-servant—geography—yield!

If it should be urged that the subject as programmed for the lower grades is given adequate emphasis in education, this needs to be realized: The adolescent mind is ripe for geography. The high school age is the time for speeding up the conquests of the conceptions of geography. Perhaps the high school boy would have less respect for the athletic arena, if he could be brought to realize that the earth is staged with conquests, and the scores of civilization, after all, are the only records worthy to be made by any thoughtful person. Perhaps he would find less of what he judges worth while in the pool rooms, and more that he might be led to judge surpassingly worth while in the school rooms, if the earth in its fullness of resources were better comprehended by him. His best cure for the inebriation for applause from the bleachers is such a renovation of attitude as will convince him that pugilistic strength is unworthy to associate with geographic sagacity.

This is the privilege, and should be the rights of the high school pupil: To acquire a large fund of geographical knowledge which will safeguard his adolescent expansion, serve him in the occupations which may be entered upon, and constitute a foundation for a broad and eventful citizenship. To have rendered available the literature of geography with which he may become familiar in his pursuits of useful knowledge. To become skillful in the interpretation of the various kinds of maps and other symbolic representations of geographic facts. More particularly to realize a wide and interesting acquaintance with the relations between causes and effects in the earth's geographic program. Particularly should there be skill in interpreting the relations between the various surface forms and conditions and the natural causes which are responsible for these effects.

To preoccupy with an eventful program the common ground between the material sciences and history is the privilege of high school geography. This province has lain fallow too long.

To preoccupy the adolescent mind in its transition from the inherent provincialisms of childhood, with its innately narrow attitudes, toward the set attitudes of the adult mind is also the privilege, if not the duty, of high school geography.

In this common blending ground between childhood and adulthood, and between history and the material sciences, lies the main chance of geography. Here must its educational conquests be staged. Here must it render its best and most loyal service to the cause of personal education. Here it may achieve, if it be worthy and its advocates be efficient, or it may be slack, if they lack the indispensable requisites for rendering so worthy a service to the cause of civilization and of education.

Just now, while every mind is expanding from the former provincialism, under the prodigious demands of the present world war, is the time to transform and intensify geography teaching in the high school. Countless families here have members both in the high school and others over there. Each morning's news makes the wide world but the front yard of the American home. Letters come from the front lines, and letters go from the living rooms here, shuttle-like, weaving a fabric overspread with geographical designs that are inwrought by the outpouring of human sympathy and family affection. In this interchange among peoples, who hitherto were separated, distances are disappearing, and international geography is being compressed into home geography.

As a provision for the economic readjustments, soon to confront us, the high school must respond and supply the geographic foundations for the new educational superstructure. The unneighborliness of the hill country people must be supplanted with extensive knowledge of peoples and places, of trade and travel, of commerce and industry, and of natural resources and their development, actual and possible.

Never has there been an occasion so eminently fitting for any subject to be expanded in the high school as this which now confronts the advocates of geography. It must become the conspicuous core of the educational planning

for the world-life which each must be trained in, if we are to keep step with the enlarging aspects of human opportunity and duty.

Just as it is necessary to be able to read in order to possess the key which unlocks the doors of the treasure houses of records of achievement, so must we be, in no small sense, geographers in order to be inducted fitly into this modern world-wide citizenship, and to realize the common interests, needs, and activities of the new world-wide humanity.

These then are the aims of high school geography:

1. To prepare the adolescent communicant with the knowledge, attitude, and skills which are requisite in order meritoriously to partake of the consecrated provisions, which, blood bought and sacrificed for, are to be forever dedicated to the cause of international magnanimity by which alone peace on earth may be conserved.

2. To equip the youthful candidate for the opportunities, responsibilities, and duties of the new citizenship, which is world embracing in its scope, with those indispensable qualifications for intelligent self-adjustment and for patriotic service.

3. To guide the high school youth so addicted to the primitive clan, tong, and tribal ideals and interests, through this bog of nomadic instincts which surfeit upon rivalries, contests, and antagonisms, safely and expeditiously, into the new zone of civilization to which in these days we are being brought. Then will provincial pennants give place to universal peans, and yell-squads, silently, seek for admission into the new realms of universal service.

4. To awaken the realization that, just as nature's forces have operated to store limitless geographical resources to provide the earth as man's home, and as man has intelligently adapted his activities and energies toward shaping these resources to realize best upon the abundance of the natural provisions, so must the youth realize that his mind must undergo a corresponding treatment whereby he may be sped up to comprehend more fully the direct bearing of man's relation to the earth. This humanization of the idea of the earth as man's home, through effective geography teaching, is as necessary for man's continued welfare as is man's activity in modifying the earth to transform it into a more serviceable home. The people who understand this best, and realize upon it the most, will outstrip all other peoples in the procession for the conquest of the world.

Mr. W. E. Andrews of Pana and Mr. F. W. Cox of Flora were selected as members of the executive committee.

10. Manual Arts Section

Morning Session

The Session opened at 9 A. M. in room 418 University Hall, Professor E. J. Lake presiding.

Thomas R. Street, Sullivan Township High School, was appointed Secretary in the absence of H. C. Mohler, who was elected permanent Secretary in 1917.

Mrs. Nellie Wall, Danville, Ill., was elected to the Manual Arts Section Committee for the three years ending with 1921.

The committee is: Heber C. Taylor, Oak Park, 1919; Erwin Touve, Marion, 1920; Mrs. Nellie Wall, Danville, 1921; H. C. Mohler, Decatur, Secretary.

The following committees are organized under the Manual Arts Section: Committee of five appointed in 1916 to revise the course

of study for manual training adopted by the Manual Arts Section of the Conference: Chairman, S. J. Vaugn, DeKalb; C. E. Howell, Decatur; Albert F. Siepert, Peoria; A. H. Hill, Rock Island; Miss Anna G. Brown, Galesburg.

The reorganization of this committee, made necessary by the absence of members from the state, was not attempted because of the absence of the chairman, and the matter was referred to the secretary of the section to consider with the chairman by correspondence and report at the 1919 meeting.

A committee of three appointed in 1916 on standardizing grading methods in manual training reported no development of the subject in addition to the report of last year because of the disorganized condition of the work in the state. This committee is: A. C. Bloodgood, Aurora, Chairman; P. E. Errickson, Herrin; A. P. Laughlin, Des-Plaines.

A committee of three appointed in 1917 on revision of the art course: Chairman, Mrs. Nellie Wall, Danville; Miss Maude Smith, Jacksonville; Professor Walter Sargent, Chicago University.

Mrs Nellie Wall, chairman of this committee, presented the following report:

During the time which has passed since the previous report was made to this Association, many significant changes have occurred in secondary education, which have had a direct effect upon the organization, and the work of art departments. Among these changes, the most evident in its direct effect upon courses in drawing and design, has been the advance of industrial and vocational education. Some of the noticeable effects may be described as follows:

1. Design was formerly taught in most schools as a separate subject. General principles were presented and illustrated by actual applications. Whether these applications were objects of practical use or not, the primary reason for their appearance in the class room was not that the object was needed, but that some illustration of the principles, was desired. Now the departments of household art, printing, shop work in wood, metal, concrete, etc., present actual problems not selected originally as illustrations of a course in design, but calling for design in order that the products may be *excellent,* from the point of view of design as well as from that of good constructive workmanship.

2. Working drawing is now organically related to the work of the shops, and a large part of working drawing consists of freehand records. There is less inked-in, instrumental drawing.

3. Much of what was formerly taught under the subject of pictorial drawing is now included in the shop drawing. This is especially true of the sketching of perspective appearances of constructed objects. Freehand drawing of this sort, much of which is in the general style of cabinet projection, is now used as a means of description, experimentation, and invention, in connection with constructive work.

This association of so much of the drawing and design with industrial and pre-vocational courses has also resulted in a revaluation of those lines that have not been included in this affiliation, namely the special art courses, and has offered opportunity to make them simpler and more direct in their aims and methods.

Your committee wish to acknowledge their indebtedness to Miss Nama A. Lathe of the University High School of the University of Chicago, for her

generous contributions of suggestions, outlines, and a table of subject matter for the course in the history and appreciation of art.

I. Organization of Courses

Since drawing is no longer regarded as an isolated subject, but to a greater degree than heretofore, as a language for other subjects, it is not practicable to state courses in terms of particular objects to be drawn at given times. Your committee has therefore concluded to submit types of courses and the general range of subject matter with which present conditions seem to indicate that these courses should deal. The three types of courses recommended are as follows:

1. Industrial art courses.
2. General art courses.
3. Courses in the history and appreciation of art.

The character of these three types of courses is indicated more in detail as follows:

1. Industrial art courses: These include drawing and design in direct connection with shop work and with household art.

(a) Courses in connection with shop work. In the case of these courses the shop work and the drawing are planned each with definite relation to the possibilities and needs of the other. Frequent consultations between the teachers of the two parts of such a course are necessary in order to keep that unity which is so important a factor in the development of any course.

The problems are for the most part the current problems of the shop, and these determine very largely the *particular* topics to be considered. In most cases the problems of the shop and other industrial work with which the drawing and design have to deal, are already arranged. Your committee therefore have sought to make their recommendations such as will apply to any situation. These recommendations are as follows:

That high school industrial drawing and design should include:

A. Freehand drawing of appearances to describe construction.
   1. Sketches directly from objects to show the appearance in perspective.
   2. Sketches for the purpose of experimenting with and perfecting ideas of construction and design.

      To do this three things are required:

      (a) Ability to judge proportions and angles rapidly and with fair accuracy.

      (b) Mastery of a few basic constructive forms so that these can be drawn in any specified position or modification or combination, from imagination.

      Since a rectangular, a cylindrical and a hemispherical solid are basic to most forms of construction the drawing of these from imagination according to specifications should be thoroughly mastered.

      Tests indicate that theories of perspective including principles of convergence, and foreshortening are not the best way of introducing the study of these forms. The most rapid and effective progress appears to depend upon developing the pupils' ability to judge as to whether the drawings appear geometrically consistent or distorted, (that is, as to whether they look right or not,) rather than upon the knowledge of formulated principles of perspective. It should be noted that this method differs radically from the old time teaching of geometrical type forms by principles of perspective.

      (c) Knowledge of an effective method of procedure in drawing constructed objects, i. e.—what lines are the basis of the form and

determine the length and direction of the others. For example, in a rectangular solid standing on a horizontal plane, to draw one vertical edge, preferably the nearest, determines the scale of the drawing. To draw one main edge extending to the right and one to the left, so as to show their apparent slants and lengths, determines the proportions and apparent position of the whole object. These are the key lines and by them are determined the direction and proportion of most of the other lines even if the form is considerably complicated.

B. Drawing of plans and patterns to describe construction.

1. Freehand sketches of patterns and orthographic projections directly from objects.
2. Freehand sketches of patterns and orthographic projections for the purpose of experimenting with and perfecting ideas of construction and of design.

To do these requires three things:

(a) Ability to read orthographic projections rapidly and to translate facts of appearance and structure into the shop conventions of working drawing, with complete dimensioning according to shop practices. In other words, given an actual piece of construction, to make sketches in orthographic projection which shall include all data necessary for constructing the object. For all practical purposes it is necessary to understand projection only in the third angle. An introductory discussion of all four angles is generally confusing.

(b) Ability to put one's own ideas of a piece of construction first into freehand working drawings with complete specifications, and then into accurate instrumental drawings.

Most copying of instrumental work should be eliminated. Only a very limited amount is valuable to give standards of technique. Much detailed instrumental drawing should be avoided. Freehand working drawings and appearance sketching are the chief channels of constructive thinking. The finished instrumental drawings hold somewhat the same relation to these, that the stenographer's copy does to the author's manuscript. Much instrumental drawing tends to substitute manual dexterity for constructive thinking.

(c) Ability to sketch the appearance of an object from the working drawing, as data. This is particularly valuable in enabling pupils completely to visualize and understand structures when only the working drawing is given. It requires much of the same sort of constructive thinking that is employed when objects are actually constructed from working drawings.

In both appearance sketching and orthographic drawing, speed as well as accuracy should be cultivated.

C. Constructive and decorative design.

1. Choice of materials and processes best suited to meet the specifications.
2. Choice of styles of construction and decoration most appropriate to the piece of work in hand.

These require:

(a) Acquaintance with a reasonable range of materials and processes, and some knowledge of the history of industries more or less closely related to the immediate project. This calls for class discussions, visits to industrial plants or other places where constructive work of the sort under consideration is going on, and assigned reading planned to open up an industrial and historical outlook.

(b) Study of artistic styles of construction and decoration and the adaptation of these to the problem in hand. In any particular instance, as for example in furniture, this involves some study of the history and development of styles and a knowledge from books and museums, of the best that past has produced, and also a practical acquaintance with modern products and current fashions as displayed in trade literature and advertisements and in stores.

Appreciation and discrimination are developed by selecting and by classifying examples according to various styles and also according to degrees of excellence in things of the same general style. Note book collections of sketches, and of illustrations from advertisements, trade journals, etc., are practical helps. After the characteristics of a style have been given, it is helpful to select, classify, and discuss examples accordingly.

(c) Supplementary practice in making good space arrangements and in drawing with facility a few typical curves, for example, arcs of circles, ellipses, and spirals of varying degrees of curvature.

Pupils should be trained to self reliance in analyzing a problem so as to outline effective methods of going to work and to decide along what lines investigation of reference material will be helpful.

In connection with the discussion of general principles of beauty in constructed objects it is often profitable to make some designs for objects which cannot be completed in the shop on account of the lack of time. Some of these designs may be used later in advanced shop courses.

A suggested method for developing a design is:

1. Preparation—
   a. Clear definition of the necessary limits of the problem.
   b. Possibilities of variations within these limits to obtain greater beauty.
   c. Refinement of proportions and lines.
   d. Possibilities of decorative treatment suggested by the construction.
2. Experiment—

   Each pupil makes from two to six sketches, varying proportions, contours, and decorative treatment.
3. Criticism—

   Sometimes individual, but whenever practicable, by the class, selecting the most pleasing features and suggesting improvements.
4. Completion—

   After selection of each pupil's best designs, any corrections or improvements may be made and the result traced and dimensioned for the final plate and for the shop.

Books of Reference.

Ernest Batchelder—Design in Theory and Practice.
Walter Crane—Line and Form.
Dora M. Norton—Freehand Perspective.
Hamlin—A History of Ornament.
H. D. Eberlein and Abbott McClure—The Practical Book of Period Furniture.
The International Studio monthly magazine, John Lane Co., N. Y., contains a great deal of material which if cut out and classified, is conveniently useful.

Standards of Attainment. As a result of this course the pupils should be expected to develop a habit of thinking of design in relation to the definite

conditions necessary for the most complete satisfaction of the function of the object and a standard of excellence in proportions, enrichments, and workmanship which will lead to discriminating choices when they are purchasing constructed objects. They should be able to sketch with reasonable accuracy any constructed form.

D. Courses in Household Art.

II. General Art Courses

These courses should be planned to train ability in representation along two lines. One of these is descriptive drawing to enable pupils to meet readily the ordinary demands for illustration in connection with any school or home interest, not reached by drawing in connection with the industrial arts. Sketches and drawings in connection with history, geography, literature, and the natural sciences are examples of this sort of drawing.

A second purpose of these general art courses is to meet the need of pupils with special art interests. This group of pupils includes those to whom the practice of art is a continual source of pleasure of a high sort. They may never make art a profession, but it will always be to them a means of discovering new interests and enjoyments. It includes also those talented few who will make art in some form, their life work. For these pupils the courses are vocational in character and help to discover and guide their abilities into the lines for which they are best adapted. These are the pupils who become industrial designers, painters, sculptors, illustrators, architects, etc.

For two reasons work for only two years, is here presented. First, because high school classes in drawing are usually made up of pupils from different year groups, and secondly, under present conditions a student electing art for four years is likely to take part of the work in industrial art or a historical survey of art. Consequently courses two years in general art meet the requirements of nearly all localities.

Outline of Subject Matter in General Art Courses

Introductory Class

Principles of Design. Pleasing space arrangements emphasizing simple balance, unity, and subordination, parts made prominent or subordinate according to their relative importance in the design. Rhythm and harmony, color theory including simple color combinations.

Application. Lettering and related decorative design in headings and page decorations, posters, etc.
Border and surface patterns designed for pottery, and finally worked out in clay.

Principles of Pictorial Representation. Lines of growth and structure, foreshortening and perspective, simple composition.

Application. Nature forms and constructed objects for expression of details of structure truthfully told, beauty and character in lines of growth; and in masses of dark and light and of color.

Simple Pictorial Composition. For use in illustrating selected themes. In using drawing as a means of illustrating other high school subjects it has been found that pupils can be taught methods of procedure in illustrating a theme, which will make their drawing a genuine piece of study. The following steps are suggested for working out a pictorial theme.

1. Write out a list of the things which if introduced into the picture will contribute most towards illustrating the subject. Arrange these in order of their importance.
2. Select from this list the few things most essential in the illustration, and sketch experimental arrangements of these. Indi-

cate the placing of characters and objects in some fashion, however crude.

3. In sketch books, collect data from nature and from photographs and pictures, which will help in drawing the things to be included in the illustration.
   With the aid of these, redraw the best arrangement previously made. The medium best adapted for the illustration should be chosen and used, in part at least, in making these sketches.
4. Study good illustrations, if possible, illustrations in the same medium which is to be used, and see how others have worked out similar problems. Pencil, pen-and-ink, charcoal, water color, wood blocks, etc., have different individual possibilities, limitations, and charms.
5. Through successive experiments, and accumulated data and increased skill, make the illustration as expressive and artistic as possible.
   By working up pictorial themes in this way, pupils should gain some appreciation of the manner in which pictures, develop and of the fact that a work of art however spontaneous in appearance is usually the culmination of a long series of sketches, observations, and experiments. This experience contributes to their understanding of art, something comparable to what the production of themes in *English,* is expected to add to one's appreciation of literary methods.

Advanced Class

Principles of Design. Pleasing space arrangements emphasizing pattern of light and dark, and consistency of style, conventionalization of natural forms. Advanced color theory.

Applications. Historic Styles of lettering. Posters, book decorations, book plates, metal work, textiles, pottery, cement, and other special problems depending upon the school location, and equipment.

Principles of Pictorial Representation. Foreshortening and perspective continued. Composition with special emphasis upon style, as illustrated by the types of composition of various artists, and upon the special possibilities and limitations of different mediums.

Applications. Plant forms. Action and structure of the human figure and of animals. Development of pictorial themes. Drawing of landscape and of the exterior and interior buildings.

Reference Books.

Standards of Attainment

First Year

At the end of the first year pupils should have ability:

(a) To draw with reasonable accuracy of proportion and truth of perspective, and with some beauty in composition and style, groups of still-life, landscape and nature forms. This includes ability to select from these subjects those elements which give pictorial effects.

(b) To originate and organize, for a flat surface, a decoration which shows feeling for beauty of shapes, spaces, light and dark, and color.

(c) To select and use harmonious color schemes.

They should know:

(a) Several ways of modifying colors to produce finer qualities and of modifying relationships to produce harmony.

(b) A good style of lettering, and be able to use it freely.

Second Year

At the end of the second year the pupils should show increased ability along the lines just indicated, and, in addition, they should be able:

(a) To express their ideas in several different mediums with discrimination in regard to the qualities and conventions peculiarly appropriate for each.
(b) To draw the human figure expressively and with reasonable accuracy of proportion from memory or imagination.
(c) To appreciate some of the broader applications of principles of art in home, community, and civic life.
(d) To work as one of a group in a community problem such as a stage setting, mural decoration, etc. They should know good methods of procedure which will enable them to undertake new or unusual problems with some assurance, and at the same time possess such an appreciation of the excellencies which lie beyond their present abilities, that they will maintain the sensitive attitude of learners.

III. Course in History and Appreciation of Art

The general aim of this course is to give acquaintance with the salient characteristics of styles of architecture, painting, sculpture, and industrial design, of the chief historic periods of art. It also brings to the attention of pupils the more important masterpieces of these periods. In general surveys it is of course impossible to make an exhaustive study of any one topic. Nevertheless some characteristic features of the arts of different times, which express most intimately the life and artistic ideals of the peoples, can be shown. Pupils may become acquainted with many of the greatest masterpieces in a way which gives new meanings to history, literature, and current events. *Modern* art gains added significance, when viewed in the light of a knowledge of past art, and modern life is interpreted from another point of view, when the arts of the present are recognized as being its inevitable expression. The specific aims of this course may be stated as follows:

(a) To present for consideration and acquaintance many important masterpieces in sculpture, architecture, painting, and the allied arts, in such a way as to awaken or increase an interest in the beauty and significance of such works.
(b) To give a training in observation and consideration of works of art which should lead to a discriminating judgment.
(c) To give experience in the use and enjoyment of art museums and libraries.
(d) To develop a conscience in regard to civic beauty.

Suggestions regarding methods and materials

Lectures by the instructor, illustrated by lantern slides or by other reproduction. Reproduction of the works under special consideration should be on exhibition in the art room, or elsewhere at the time. Visits to museum collections, where these are available. Co-operation with the public library in securing loan exhibitions and preparing lists of books and photographs.

Note books kept by students for historical outlines, descriptions of some of the masterpieces, records of visits to exhibitions, and other data of interest. The notebooks should be illustrated by prints of works of art and by tracings and sketches. Inexpensive prints can be obtained.

Usually arrangements may be made with some large museum to furnish post card and other inexpensive prints for note books, as well as larger reproductions in monochrome and in color. The lantern slide department of the Art Institute of Chicago is glad to co-operate with schools in the matter of lantern slides for illustration of courses of this type. Address Miss Gardner, Art Institute, Chicago, Illinois.

While for purposes of classification, works of art are easily and naturally grouped for study according to country, type, or period, pupils should be led, so far as possible, to realize the individual qualities of masterpieces, and to avoid making general judgments on insufficient experience.

The following outlines indicate a method which may be used in the study of masterpieces. These outlines are supposed to be put into the hands of the pupils as a guide in the study of any given work.

An Outline for the Study of a Piece of Sculpture

Remember that a picture of a piece of sculpture cannot give the same impression as the work itself. Even a cast loses somewhat, and a cast of a small copy frequently gives a very different effect from the original.

To see a piece of sculpture, one must look at it from all points of view. The lighting and the surroundings also change the effect.

1. Consider:
   - A. The subject:
     What is represented?
   - B. The accessories:
     Do they emphasize the subject or attract your attention away from it?
   - C. The purpose:
     Is this sculpture a decoration for architecture, or landscape?
     Is it commemorative or ideal?
   - D. The sculptor's language:
     What is the material? What influence has it exerted upon the expression of the form?
   - E. The composition:
     Examine the work from different points of view, noting the suggestion of solidity, the play of light and shade, the treatment of details.
   - F. Your own response:
     Does the sculpture give you any pleasure?
     Can you tell how or why?
     What do you know of the sculptor's life and personality which might help you to understand his work? Is there anything in the sculpture which gives you a clue to the life or ideals prevailing when the sculpture was produced? If so, what?
2. Can you recall any image of the sculpture when you cannot see it?
3. Is there any place in your own community where such a work of art would be appropriate? What should sculpture add to a park, a public building, a home?

An Outline for the Study of a Building

Remember that a picture can give only a partial idea of the building. Remember, also, that problems of construction, of strength of materials, of lighting, heating, etc., must be considered by the architect. He must be able to solve these, and to satisfy the requirements of the intended use of the building as well as to consider and choose beautiful proportions and appropriate forms of decoration.

1. Consider:
   - A. The plans, elevations and perspective views.
   - B. The use of decoration.
   - C. The location and its climate:
     In what ways have they influenced the building?
   - D. The purpose:
     What effect has it had upon the form, size, decoration and placing?

SUBJECT-MATTER OF COURSE IN THE HISTORY AND APPRECIATION OF ART

PERIOD	ARCHITECTURE	SCULPTURE	PAINTING	ALLIED ARTS
Prehistoric and aboriginal	Dolmens Cyclopean walls Cliff dwellers' homes	Totem poles Charms	Animals in cave dwellings Pictographs	Textiles Tools Basketry and pottery
Egyptian	Lintel-Stone Temples Pyramids	Sphinx Rock-hewn temples and tombs Colossal stone figures Figures from tombs Relief decorations Hieroglyphics	Decorative On walls Mummy cases Columns Sculpture	Pottery Jewelry
Chaldean Assyrian, and Babylonian	The vault—Brick and tile	Reliefs Gems and seals Figures		
Greek	Lintel-Marble and stone Temples { Doric, Ionic, Corinthian }	Decoration of architecture Cult images Votive offerings { Gods, Goddesses, Athletes } Grave stela Portraits	Enrichment of architecture Mural painting Portraits	Ceramics Metal work Coins and seals
Roman	Round arch Vault & dome—Brick, stone Temples Amphitheatres Palaces and baths Triumphal arches Tombs Forts, walls, aqueducts, etc.	Decorative and commemorative Portraits Relief	Mural decorations (Pompeii) (House of Livia)	Mosaics Bronze utensils Furniture
Early Christian (West) Early Christian (East) (Byzantine)	Arch-Lintel-Wooden roofs Arch and dome Churches		Decorations—Allegories	Mosaics-Decoration
Romanesque	Arch—Few windows Churches	Decoration of architecture		Mosaics Missals
Gothic	Pointed arch-Windows Buttress and flying buttress Churches Schools Dwellings	Decoration of architecture Stone Wood Ivory	Altar pieces	Furniture Missals Wrought iron

Mohammedan	Bulbdome Horseshoe arch Mosques Palaces Tombs		Arabesques	Mosaics Lettering and illuminating Textiles
Indian	Temples Pagodas	Architectural decoration Figures—idols		Jewelry Textiles—Block printing
Japanese	Pagodas	Wood, ivory, bronze, porcelain	Prints	Textiles and embroidery Pottery and porcelain Metal work Landscape gardening
Persian				Rugs and textiles
Renaissance	Combinations and adaptations of carlier styles Palaces Churches	Reawakened interest in ancient sculpture Italy	Decoration of churches Italy Flanders Germany Linear perspective, anatomy, composition color	Silver and goldsmith work Furniture
Seventeenth Century		France	Spain Flanders Holland Italy Aerial perspective, light and shade	Furniture Tapestries Metal work
Eighteenth Century	English American Colonial	France	France, America England Spain	Furniture Pioneer Crafts in America
Nineteenth Century Twentieth Century	Steel construction Cement Skyscrapers	France America England Germany	France, Russia, Germany England, Spain, Holland America, Norway Painting—sunlight impressions	Renaissance of crafts Landscape gardening

E. The material:
Why was it used? What difference does it make in the form of construction used?
F. The construction:
What influence has it had upon the form, size, and decoration?

2. Does any building which you know show any influence of this? Do you think the resemblance an advantage or a disadvantage? Why?
3. Compare this building with another constructed for the same purpose? In what respects are they alike? How do they differ?
4. Do you enjoy looking at this building? Can you tell any reasons why?

An Outline for the Study of a Picture

Study, not to approve nor disparage; but to appreciate the expression of genius and enrich your own perceptions and sources of aesthetic pleasure.

1. Look at the picture. Remember that no reproduction can give the full effect of the original.
2. Consider:
   A. The subject.
   What is the dominant interest in the picture?
   B. The background and subordinate interests.
   How do they enhance the subject?
   C. The purpose of the picture.
   Is it a decoration, a record of appearance, an illustration, or some expression of an artist's ideals?
   D. The artist's language.
   What are the main features of the composition? To what purpose has the artist used line, color, drawing, values, textures, light and shade, etc.?
   E. Your own response.
   (a) Aesthetic. Does the picture give you any pleasure? Can you tell how?
   (b) Intellectual. What does the picture tell you? What do you know of the artist's life, personality, country, or times, which helps you to understand the picture?
3. When you are away from the picture, find how clearly you can recall it. Can you enjoy it in memory? Have you seen anything in nature or life which reminds you of this picture?

Standards of Attainment

(a) At the end of this course the student should know some of the main facts in the progress and development of art through the history of the race.

(b) He should have a knowledge of some appreciation of the qualities which distinguish the work of art from the commonplace production.

(c) He should have gained for himself fairly distinct memories of a number of fine and beautiful works.

(d) He should have learned how to observe works of art with discrimination so that he will be less inclined to pronounce judgment without having given due consideration.

(e) He should be able sincerely to enjoy many different qualities in works of art, thus making possible a broad field of aesthetic appreciation.

Miss Maude Smith and Mrs. Nelle Wall wish to express their appreciation of the untiring efforts for the success of this report of the third member of the committee, Walter Sargent, Professor of Art, Chicago University.

The Educational Department of the United States government had appointed Mr. Sargent to make a report, during the past summer, of the High School courses, of three of the largest cities in each state of the union.

Therefore, members of your committee feel that the report made at this time is the direct result of Mr. Sargent's work for our government.

For that reason, the Manual Arts section of the Illinois High School conference is most fortunate in having secured Mr. Sargent's valuable services, in comparison with which the work of the other members of your committee was most meagre.

The motion was made and carried that this report be accepted, published and a copy be sent to each of the Supervisors of High School Art Departments in the state.

Professor F. D. Crawshaw, University of Illinois, President of The Academic Board of The School of Military Aeronautics, addressed the meeting on the subject, "A Manual Arts Program After the War."

Manual Arts After the War

Synopsis of an Address by F. D. Crawshaw, President Academic Board, U. S. School of Military Aeronautics, before the Manual Arts Section

FUNDAMENTAL THESES

I. *Manual Arts* comprises all forms of Educational handwork or handwork requiring motor-mental co-ordinations, not including laboratory work done in connection with pure science.

II. *Manual Training* instead of being an obsolete form of handwork in schools is, more than ever in the past, about to have its rightful place in educational practice. It is based upon sound educational principles and is bound to continue as an educative agency.

III. *Vocational Education,* after several years of experimentation followed by successful achievements during the extreme conditions of the World War, will develop along substantial lines of proven practice.

The three theses were briefly elaborated by the speaker to show the requirements for a program of development upon which he spoke as outlined below.

SOCIAL DEMANDS

1. The war has changed the social conditions in all communities—even the village and hamlet.
2. In almost every community there will be missing or physically handicapped for life, one or more of its members.
3. The intelligence as well as the sympathy of the citizenship of every community will call for a larger and stronger brotherhood. Men will strive to serve one another in a more substantial way than in the past.
4. What is done under the name of Manual Arts will answer the question, "what is the social significance and value of this work" more than ever before.

ECONOMIC DEMANDS

1. The necessity of making school work function economically will make its strongest appeal in the years to follow the war.
2. There will be a definite meaning, which will have an economic coloring, growing out of the experience gained in future manual arts work. The thing made may not have a "marketable value," in the commercial sense,

but it will nevertheless have an economic value because there will be an established reason for its creation, both in the mind of the pupil and that of the teacher. This has not always been true in the past.

3. The article made will be useful because it will be used by the maker or by one for whom it will be made.
4. Both the processes used in producing manual arts product and the product itself will indicate the natural and desirable activities of the maker and his environment.

INDUSTRIAL DEMANDS

1. All manual arts work will represent a selection of the best industrial methods. The selection will be made on the basis of clear thinking and skillful doing. The goal sought will be either a citizenship appreciative of industrial needs and demands or a body of trained skilled workers in well defined industrial fields.
2. The haphazard methods of the near-past industrial school will be superceded by those of the early crafts in which a workman was trained in fundamental manipulations which have definite industrial applications. The "Exercise" will no longer be tabooed simply because it has no immediate commercial value.
3. Farm and jig work will not precede or take the place of well organized developmental handwork. Indeed, a proper knowledge of and practice in the use of tools and the fashioning of materials will be regarded an essential preliminary step to the introduction of production methods.
4. Industrial handwork will no longer be regarded as only that which utilizes modern factory methods. There will be a sensible reversion to the methods of early craftsmanship and community industry followed, at least in "vocational" courses, by a study of or practice in the scheme of economic industrial production.

EDUCATIONAL DEMANDS

1. Manual Arts of the future will be a motormental process with as much emphasis upon the mental as upon the motor.
2. The intellectual element—too often obscured by emphasis upon the "doing" —will be a prominent consideration in future manual arts planning.
3. There will be a distinct line drawn between handwork for disciplinary ends, or as a part of liberal education, and handwork for specific ends, that designed to be vocational in character.
4. We will emphasize the *why* as well as the *how* in future manual arts.
5. Manual Training will mean a thought process quite as much as a hand process, and vocational education will no longer be confused with vocational *training.*

LESSONS TO BE LEARNED FROM WAR SCHOOLS

1. Those enrolled in schools conducted by the government during the period of the war were selected for special courses because of their particular fitness for the work involved.
2. Large classes were divided into groups, each to be conducted by an individual instructor. Much of the instruction given was individual.
3. Promotion, demotion or discharge was individual and was made whenever necessary. Students were not permitted to continue long as laggards in any class.
4. A definite *near-future* rather than *far-future* goal was established for every course. In general, courses were specific rather than general; often vocational in character and frequently of the "short unit" type.
5. Instruction was given by those peculiarly well fitted for particular posi-

tions, both as to personal and technical qualifications. Materials of instruction were carefully selected. Courses were freed from extraneous material.

Afternoon Session

Professor E. J. Lake presided.

Mr. L. Day Perry's address, "Certain Mediums in the Manual Arts," was omitted. Mr. Perry was not able to be present.

"Lessons in Organization,—The S. M. A., University of Illinois," was presented by William K. Yocum, who spoke as follows:

The School of Military Aeronautics at the University of Illinois is one of the five ground schools for the training of aviators. The other four are at the Universities of Texas and California, Cornell and Princeton. Here the cadet, as he is known during the time he is in school, receives his first training, which prepares him to become a member of the flying corps. After graduating from ground school, he goes to a concentration camp, where he continues military drill and gets practice in firing a machine gun. As fast as there are openings at the flying schools, the places are filled with men from this camp. After learning to fly, the aviator may be sent abroad immediately, presumably to complete his training in flying, or he may go to a special school for further instruction in the United States.

The ground school course lasts for twelve weeks. When the cadet enters he has passed a rigid physical examination and also a mental examination, which insure his preparation for the ground school course. Our responsibility for his training is for the purpose only of producing aviators, and if he does not make good, he is either sent back to civil life where he may enlist again or be drafted, or transferred to another branch of the service. A new group of men known as the "A" squadron, enters every week, and for several months the size of these entering squadrons has been uniform.

The course of study is arranged so that every cadet of average ability can get *all* of the subject matter in the prescribed time. Some few are not able to do this, and there are automatic rules enabling them to repeat the week's work or to provide for discharge if they are not capable. If a man gets sick or is absent on furlough, he is demoted without discredit and continues where he left off as soon as he takes up his study again. If a cadet is deficient in a week's studies, he is demoted and must repeat the week. A second demotion of the latter type automatically discharges the cadet. However, before such action is taken, his case is gone over by a committee composed of the president of the academic board and heads of the departments, who make the final decision. At this same meeting the other deficiencies are discussed and wherever such action seems advisable, the cadet in question is called before the president of the academic board and warned or given suggestions. It might be mentioned also that general military efficiency and bearing are graded and taken into consideration as are academic subjects.

In order to make weekly promotion or demotion possible, weekly records of the cadet's performance must be recorded. Where the men are divided into small sections for classes, daily grades are possible, and where the sections are larger, frequent written quizzes are given. In some departments, as for example, signalling, grades depend upon ability to send or receive a certain number of words per minute.

The weekly promotion system has its advantages. Every cadet knows that he will be rewarded with a commission upon completion of his course in the various schools, and has this as an incentive for keeping up with his studies, and since promotion depends upon regular preparation instead of

cramming, as is often the case in high school or college, he does his work day by day. The frequent taking of records also makes for very accurate judgment of the cadets's ability.

At the end of each week the names of the men in each class are sent, together with the schedule for the following week, to the heads of the departments, and from this, teaching schedules for instructors are compiled. In the gunnery department, for example, these schedules are posted on a bulletin board where each instructor can tell at a glance which section he will have at a certain hour, where it will meet, and exactly what part of the course is to be completed during that hour. With the class cards for each section, which are filed in a case for the purpose, there is another card on which is printed the weekly schedule. From the bulletin board he knows whether the class is meeting for the first, second or third time, and from the class card, he knows just what to do during this hour. The bulletin board also outlines other duties of each instructor, such as staff meetings, committee meetings and correcting examinations. This last, in the gunnery department, is standardized, and each instructor grades but one answer. This makes for uniformity in grading. The weekly schedule for all other departments in the school is posted, and from this, any instructor knows where to find a class that he may wish to visit. These visits are part of the regular duties of each instructor, and he is expected not only to visit the class, but to make a written report on his visit. From these visits he learns new methods of teaching.

Since an instructor can tell what he is to teach each hour, by consulting the bulletin board, it is evident that the instruction is standardized. The content of the course and number of hours devoted to each part, are determined by a man or group of men in Washington, and sent to all the ground schools in stencilled form. Generally the outline only is sent, but in some phases, such as the handling of machine guns, even the position of the cadet as he sits behind the gun, is standardized. Where methods are not indicated in the stencil from Washington, they are determined by the head of the department, or by a committee of instructors.

Where instruction is standardized, it is evident that all the cadets are given all the prescribed instruction and *only* that instruction. This is essential where men are to be trained in a short time to do a particular thing. If a cadet fails and has to repeat a certain week's work, he covers exactly what he is deficient in. At a flying school the aviators may be drawn from several ground schools, but since the ground school courses are uniform, there need be no repetition for any of the men. Here again a saving in time is effected.

Weekly staff meetings are a feature of the school. These meetings, lasting for two hours, are conducted by President Crawshaw. The time is divided between routine, consisting of committee reports and announcements, and talks on various topics. Visitors from other ground schools who happen to be here at the time, are invited to these meetings, where they describe their own schools and give us their impression of ours. Where a subject of interest to the staff can best be discussed by an outsider, he is asked to speak to the staff at this time. At one time an authority on the income tax explained the situation at one of these meetings, and we shall probably soon have talks on the causes and issues of the war. Army paper work, army law and regulations are subjects that most of the instructors knew nothing about when the school was started, and the military instructors gave a series of talks covering each branch. In addition to these staff meetings, each department holds regular meetings to discuss topics of interest to the department. In the gunnery department, these meetings are similar to the ones held by the whole staff.

Frequent staff meetings are valuable, because they form a convenient place to make announcements. Here also men from different parts of the school meet each other and good feeling between departments is promoted.

Since methods are discussed, each instructor has an opportunity to make his teaching more efficient.

Another feature of our school is the active inventory. Classes are conducted in the various university buildings, which necessitates a scattering of materials. The problem is made still more complicated by the fact that both university and government property are used. The inventory record is kept in President Crawshaw's office, and as supplies are received or disbursed, such action is noted on these cards.

When government owned supplies arrive, they are received by the quartermaster, who notifies the head of the department to which they are consigned. When the department receives such supplies, a receipt is given the quartermaster. If supplies are to be sent away, they are sent first to the quartermaster, who gives the head of the department a receipt. The quartermaster then assumes the responsibility for the goods. In each department the inventory is in charge of one of the instructors. Thus, by centering the responsibility, an accurate accounting for supplies is possible.

In this brief talk, the organization of the schools section of the air service has been outlined, and our organization at Illinois has been described. The features which were covered in detail are those that might well be adapted to the manual arts department of a public school system.

Exhibit:

Chart—bulletin board.
Inventory card.
Class card.

The Manual Arts Section was fortunate in being able to add to the excellent program for the day the following paper by Dean M. Schweickhard on **"Army School Organization Adapted to Manual Arts."**

Since we as a nation entered this war with the determination of winning, we have found our regular routine activities on every hand, interrupted and in some cases entirely suspended by greater and more immediate demands. Regular established industries, where ever possible and practicable, have been turned into "Victory" channels even though their former production was considered essential in pre-war times. Practically every line of industry in the country has contributed its share in men or in substance or in re-adjustment toward this great cause of humanity. The schools have been no exception, and the manual and industrial part of the school system has perhaps contributed more largely than any other department, for it has been handled very largely by men, and those almost wholly within the draft age limits.

We can not afford to let these interferences be a burden to us in any way nor set us back in the least industrially or commercially, neither can we educationally. On the other hand we must take advantage of every suggestion we can find in the present situation and thereby make improvements for the future.

Although some parts of our war program seem to be somewhat less efficient or effective than they might be, there are in contrast a great many organizations perfected under the present military direction, which may prove to be of a considerable amount of advantage to us. Some points in the S. M. A. Ground School organization here at the University of Illinois, for example, seem to be particularly well adapted to application in the field of Manual Arts.

If we may start with the larger aspects in the adaptation and proceed later to the more detailed, let us consider first the organization of the course, in regard to general make-up and the object for which it is designed. At present in the average public school or high school which has as a part of its

curriculum the so-called "Manual Training," it is a safe assertion that neither the superintendent nor the instructor, and least of all, the boy himself, knows why he is spending a certain amount of time each day in the shop. There is very little definiteness or uniformity about such work, and consequently it is accomplishing little except in some cases to "fill up a semester," or in some others to furnish a little incidental training. Each term's work whether it covers a semester or only a quarter should constitute a definite unit, and the work of each succeeding term should show a distinct difference and advance over the work of the previous one.

In a certain large high school which actually exists, until recently eight semesters of "Manual Training" were offered, all in the wood shop. The shop was equipped with an ample supply of tools and machines to provide for an almost unlimited variation of courses, but as a matter of fact, there was very little visible difference between the work of any two semesters. Boys in the eighth semester were making some of the same projects as were being made by boys of the first or second semesters, and in most cases the workmanship was slightly if any improved. Such a plan is obviously worse than useless. One of the chief justifications for Manual and Industrial Arts being in the schools is that they help the pupil on toward some useful occupation in life. True, they should also contribute toward his general education and cultivate his appreciation of beauty and value, but if they fail to furnish some concrete, workable knowledge which may be turned into channels of usefulness, their task is far from complete.

As a basis upon which to build our improvement along this line, let us do as is done in the Ground School work, and set a definite goal for each boy to work toward and finally reach. Let us make each succeeding semester which a boy spends in the shop a definite and complete unit, and do away with the hit-or-miss sort of course. We may very well go further and say that the first week shall see this done, the second see that done, and so on for each week of the term, and then stick to the plan. Plans may need to be changed frequently as regards working out of the laboratory work, but the instructor or supervisor should be able to see a sequential procedure throughout the term. If we are teaching Industrial Education, it is our duty to study very carefully the industries for which we are preparing, analyze the requirements, and then so construct our courses that we will be able to turn out workmen capable of taking a place in the industrial world.

In the army school instruction, everything is standardized as far as possible. The course in one Ground School corresponds very closely to that in any other, and similarly the subject material, methods of teaching, and conducting examinations are as uniform as possible within each individual school, and in the various departments. Such an absolute standardization is perhaps not possible within the field of Manual Arts in the public schools, and it is not advisable, for the particular needs of the local community must always be given a large amount of consideration. But it does seems well to establish some sort of standards throughout a state for example, and certainly the schools or departments of a system should be held together by a common bond in the way of a certain amount of uniformity.

What would we think of a superintendent who allowed every teacher throughout the whole system to use whatever book she chose for a text and to teach whatever she thought necessary or pleasant? We would say "He has no organization." Manual Arts is, however, conducted on some such haphazard plan in a great many cases. Perhaps, as teachers of Manual Arts, we shrink from the stereotyped course where every boy, year after year, makes the same model and the whole department gives one the impression of being as dead and unchangeable as a cast iron image. This is not what we mean by standardization, however. What we do wish to say is that a given course or term's work should be so arranged that at its completion each member of the class shall have gained a certain number of sequential details, essential to

the end for which the work is given, but that each individual shall have responded to the details in accordance with his own particular individuality. In other words, we wish to bring our share of the work in the whole educational scheme closer to the sphere of the pupil's thought and activity, and so furnish a more thorough general education by making each unit contributing toward it more precise.

Some of the details of organization which help to bring about desired results may well be taken up at this time. First an adaptation of the schedule board idea will aid materially in unifying the efforts of the teachers in a department or system where several are associated together. The board should include a space for each teacher and should show just what his duties are at any particular time. By periodical checking and re-arranging of this board the information on it may be kept absolutely up to date. By a little consideration of the schedule of any teacher it may be ascertained just what his regular duties are, what his special duties are, comparatively how much responsibility he carries, and in general how his work compares both in type and amount with that of his associates. Such a source of information will often prove to be of value to the superintendent, to the supervisor, and finally to the instructors themselves. In short it will show up the facts in black and white.

Another point in the Ground School organization which should be of interest and material value to us is the method of taking care of equipment and of keeping it up to date. It is needless to argue the comparative advantages of a good, efficient equipment, well taken care of. All of us who have had even a small amount of experience about a school shop, know that there is always an accumulation of needless and useless material. Unless such superfluous material is stored in some inconspicuous place it detracts considerably from the general appearance of the shop or department, and worse still, it acts as a sort of a dead weight, so to speak, hindering the progress of really efficient work. The equipment of any shop or department should always be kept on a working basis, and nothing should be given a place, for which some near future use can not be seen. It may be advisable to provide a storage place where temporarily discarded articles may be stored, in case a future use may be made of them, but by no means should the smooth working efficiency be interrupted by the presence of such things.

In a department of several shops or in a system of several school centers, this accumulation is more rapid than in a single shop or school, and its presence becomes a problem sooner. It will be necessary therefore to provide for some means of taking care of it. The organization of a committee suggests itself. Let it be understood clearly that this is not to be merely a nominal committee which does as too many committees do, simply meets and discusses and never accomplishes. It is to be a committee which will keep every nook and corner looked after, and will receive suggestions and recommendations from proper authority and through proper channels, acting upon them before their purpose has gone entirely out of date.

There are often changes to be made about the shops or laboratories, new equipment to be installed or similar work which may require a considerable amount of time. It will be necessary, therefore, to make this committee large enough or provide for sufficient help in order to keep the burden from being too heavy on a few. No mention has been made as to how this committee is to be made up, but it may be assumed that this will be the special duty of certain members of the staff, just as other details of the general run of affairs will be the special duty of others. This then becomes a part of their regular duty and the responsibility of it rests upon them.

Manual Training teachers ordinarily do not object to doing such work about the department, and it would appear somewhat ridiculous if they did, but as soon as the teachers begin to keep one department in running order, demands are made upon them from other departments also. We may not

be advocating a general and wholesale arrangement of "school repair work," but we must admit that there is some value, and in some cases a good deal of value in actually supplying a visible need by the work of our department. So whether the equipment committee be large or small, and whether it actually does much of the equipment work or not, it will at least be the duty of this committee to plan for all such work as may arise and make proper provision for its being done. The members of the committee must be men who are able to see ahead and have a solution ready for each situation as soon as it makes its appearance.

Every Manual Training department which is worthy of the cause for which it was organized must fulfill its duty further along the line of equipment and material by keeping a good, usable, informational inventory. A general inventory may be taken at the end of the year, and also perhaps at the beginning, but is it often checked up between times, to keep it up to date? It surely seems that a department which lays some claim at least to being connected with the industrial world should carry on its work in a manner somewhat resembling economy. Consequently we should be able to tell with very little difficulty, at any time, just what equipment and materials we have on hand and what disposition has been made of whatever has been used or sold.

Whether we know little or much of psychology, we know as a result of observation and our own experience that suggestion is a powerful agent in accomplishing a result. Therefore, if the head of the department, or the one in charge, has records that he can put his fingers on at a moment's notice, and thereby keeps a definite check on all details, it follows almost without a doubt that the individual instructors, and through them the students, will be more alert and more anxious to each do his share toward keeping the whole machine going. A head who keeps track of the details in this particular and conducts all the other phases of the department upon a correspondingly precise basis will command the greater respect of his co-workers and will consequently be able to lead them more harmoniously into the plans which seem to be for the greatest benefit of all concerned.

This matter of the inventory may also be taken care of by a committee for whom that is a special duty. The number of members who are definitely named on this committee need not be large as numbers might serve to be of more burden than profit, but every instructor over whose work the committee has authority should be a member, whose duty it is to send in reports from his small corner. In this way the main committee may be able to keep a definite record of every portion of the property and equipment, and pass it on to the head.

A final factor in the organization here which is often neglected or conducted so irregularly that little benefit is derived from it, is the staff meeting. In order for the members of any staff to work together as a unit and accomplish results which are any where near uniform, they must get together frequently and discuss common problems. In the first place meetings enable the head to keep in close touch with each of the instructors and to keep them well informed in regard to every development of interest and importance to them. Obviously then they should be held often enough so that the matters of interest will not have grown stale by waiting. Perhaps if we suggest that such meetings be held weekly the objection will be raised that such frequency would only serve to make them more burdensome as they are always dry anyway. We feel strongly, however, that if the head makes these meetings vital enough they will cease to be a burden and become attractive. In the S. M. A. here rather than dreading our weekly staff meeting we look forward to it with a good deal of anticipation, for we always know that it will be full of information and inspiration from our leader.

Our discussion so far has had to do with conditions more closely pertaining to larger schools, but the same points with slight modifications will be found to apply successfully to smaller schools or to the shop which demands the services of but one instructor. And since many of us will be called upon, through the force of circumstances, to make this further application, we may well take brief account of it here, using the same general divisions which we have used up to this time.

In the school where no supervisor exists the individual teacher is concerned more with the arrangement of courses than he is in a larger school. But whether the instructor is responsible for the planning of the course or not, he should set certain standards and hold up certain ideals as a goal toward which the pupils may strive. The teacher comes into actual daily contact with the developing boys and therefore has an infinite possibility at his command, and he shirks his obligation if he fails to make his courses full of the right kind of elements. Unless a boy is preparing for some definite trade, and most of our public school boys are not, it matters little just what project he makes or just what process he uses in making it, but it does make a vast difference just what he gets out of his work, and toward what later development it points the way for him. The teacher must be a student of each one of his boys, that he may know their individual inclinations and be able to guide them wisely into further selection of work. He will not be able to do this unless his heart and soul are in his work, and he can truthfully say: "I am teaching this particular subject for this particular vital reason. It is not something inflicted on me nor on the pupil."

The subject of standardization may be one which does not concern the individual instructor to a very great extent. It becomes a matter for him to consider chiefly when he is a member of a system where courses are standardized. Even then the instructor would appear lacking in a proper amount of self-assertion who would take a course given him and swallow it whole without putting some of the personal element into it. In fact, almost any live instructor would resent being required to teach according to a cast iron rule. Is it fair then for us as teachers to say to all the boys in one grade, "You must make this," and to the boys in another grade, "You must make that"? We may work in whatever problems or principles we feel boys of a certain grade should cover, but it is our patriotic duty to allow place for enough original thought and expression that the boys may develop that one of their American rights.

From the instructor's standpoint, the schedule-board idea may be made use of as a daily plan book and record of each boy's work. The board as a whole may be arranged with the days of the week across the top, and a space at the right of Friday for a week's summary. Down the left side of the board may be placed the boys' names at intervals as large as the individual record sheet to be used. It is usually found to be a waste at some time or other to have blank forms printed for such a purpose as this, and in some cases it is not possible. The items that it is desired to keep, instead of being printed on such blanks, may be placed directly upon the board to the right of the name, and then simply ruled or plain placed in the spaces below the names of the days of the week. It is probable that each instructor will have some particular of which he wishes to keep a record, but the following are suggested as being generally useful: Assignment—(to be made out before hour, at first by teacher, and later by the boy himself); Accomplishment—(to be filled in at the close of the hour); Time; List of new materials used, with perhaps the value of each. This scheme should make possible the keeping of such records without the cumbersome bookkeeping and checking which attends most timeslip and record methods.

Every teacher knows, theoretically at least, what effect the neat appearance of the room, sharp tools, and in general good equipment have on the attitude and work of the pupils, but how many teachers actually realize this

effect to its full extent by keeping all shop conditions at their very best? It is surprising also what added interest is instilled into the teacher himself when the shop has the general appearance of a well-oiled and smoothly-running machine. It is part of a teacher's duty toward his pupils to gain their co-operation in the matter of keeping equipment and shop furnishings in good order. If the shop is a unit by itself the responsibility ends when all its own details are attended to, but if it is part of a system it must contribute still further to the general welfare.

Keeping an inventory in the average one-room shop is not a very difficult matter. If the shop is under general control the nature and form of the inventory will probably be indicated by higher authority, and if the shop is independent of any others, a few sheets or small note book, or a combination of the two will contain all the necessary records. No matter for whom the records are kept, they should, by all means, be precise and exact. Otherwise why keep them at all?

The departmental staff meeting obviously can exist only where there is an instructional force of more than one instructor. In case there is but one Manual Training teacher in the school, however, he may go to the general staff meeting with the same attitude as he would attend the departmental meeting, and although he may not secure as much direct help on his particular problems, he may be helped to see his own way to a solution. In such a case the instructor must consider himself the chairman and members also of the several committees, and work so effectively that the results obtained will be as valuable and as lasting as those accomplished by a departmental staff, however large.

11. Mathematics Section

All papers were presented as announced in the program except the one by Mr. John T. Riddell, of Evanston, who was unable to be present. The order followed was to have all papers read first and then a general discussion of the problems presented. We are giving the papers as read and the notes on discussions as they were reported by the Secretary.

How Much Algebra Should Enter Into the Course in Junior High Schools

John L. Scott, Springfield

In the discussion of this subject, I shall refer to Junior High Schools which teach the seventh, eighth and ninth grades. These are the typical Junior High Schools.

I do not favor the introduction of algebra in the seventh and eighth grades; but do favor the simplifying of the course in algebra for the ninth year and an additional requirement of one semester in algebra in the twelfth year, or the Senior year in the High School, for all pupils who expect to continue their education in colleges and universities.

My reasons for not favoring the mixing of algebra with courses in arithmetic are—

1st. The mind of the child at this age is not well adapted to the subject of algebra. This period of the child is the memory period. It is not the period of abstract reasoning. The power to reason carefully comes later.

I have reached this conclusion from observation as well as reflection and reading. I well remember how I could imitate the solution of problems because I could remember, but could not clearly comprehend the reason. It takes a more mature mind to understand the subject of algebra.

During the past few months I have tutored professional and business men in the subject of trigonometry. They were preparing to enter officer's training camps. These men told me repeatedly how much more clearly they could understand the subject than when they took their courses in the university. It was probably due, in part, to the fact that they had a purpose now, but I attribute it to the older mind as well.

My second reason for not favoring the mixing of algebra courses with the arithmetic, or the introduction of algebra in the seventh or eighth grades, is that during these two years in school, the pupils need to devote a great deal of time to practical arithmetic.

I might add here that we need simplified arithmetic as well as simplified algebra. More thoroughness in a few essentials and less experiment in variety of applications in arithmetic, as well as in algebra, will better equip the student for his life work.

Business men are continually asking for boys and girls who can do a few things well, especially in arithmetic. Our courses in the Junior High School should be arranged to fit the pupils so that they may be able to meet this demand. You may ask why not leave all algebra work until the twelfth year, and give the time to commercial arithmetic.

Algebra is a required subject for college and university courses. One year in the twelfth year would be better than one year in the ninth, but that is not time enough for giving the necessary training in algebra. The universities complain, and rightfully too, that the students are not well prepared in algebra in the high school. I insist that one and one-half years are needed to do the work required for entrance into the university.

Now the question is how much algebra should enter into the Junior High Schools? I will answer this question by outlining the course in a general way. It would be tiresome to listen to a syllabus even if I should have prepared it for this paper; however, I shall point out a few essentials that need to be thoroughly taught, drilled and drilled over again, until the pupils are masters of them. I shall also mention some things that should be left out of the course in the Junior High Schools, but should be emphasized in the course of the Senior High School.

The four fundamental operations should include only simple problems. I mean by this that exponents that make the problems difficult should not be used. The removal of signs of aggregation should be very carefully taught.

The equation is an essential part of algebra and should have a good share in the course. Here, as elsewhere, the emphasis should be placed upon simplifying the subject. The power to solve difficult problems comes with a thorough understanding of principles involved. These principles are taught more readily by the use of simple problems. Algebra is a subject, and not a text-book. The teacher, in presenting the subject of algebra, especially the subject of equation, should have at hand plenty of material selected from different text books, and should eliminate from the course long and wearisome problems.

In some text books, there are problems that would require the entire recitation period for the solution and discussion of one of them. Such problems should be omitted in the course for Junior High Schools. Equations involving fractions, two and three unknowns, belong in this course.

The graph of equations of the form $ax+by+c=0$ should enter into the course, and exercises which require the finding of graphs of the exact values of x and y should be given.

Three special rules for multiplication and two for division should be included in this course and made a basis for factoring.

The course should include five type forms and only five in factoring, as follows:

1st, common monomial factor.
2nd, differences of squares, omitting expressions which at first sight do not seem to belong to this type.
2nd, difference of squares, omitting expressions which at first sight do not seem to belong to this type.
3rd, trinomial squares, including problems with terms disarranged.
4th, trinomials which have the form x^2+ax+b
5th, binomials which consist of the sum or difference of two cubes, omitting the difficult expression in this type.

If the course includes only these five types in factoring, it is possible to handle factoring so that its application in highest common factor, lowest common multiple, and fractions will not be beyond the average pupil.

I recommend the giving of more space and time to fractions than is usually allotted to this subject. It makes a good review of the principles taught in arithmetic, as well as of the principles already taught in algebra. Here is a splendid opportunity for drill work.

In involution I should include the raising of a binomial to the second, third, fourth and fifth powers, and in evolution the extraction of the square root only. The theory of exponents should be a part of the course and many more problems should be given in this subject than are found in text books. Again I must insist that simple problems are more useful in teaching principles than difficult ones.

The subject of radical expressions should be presented in a very simple manner. I should use about fifty problems to teach the necessary principles. A few problems in pure quadratics and one process in the solution of equations consisting of affected quadratics should complete the course. I prefer the process *by completing the square.*

The semester's work in the Senior year of the high schools will give opportunity for more intensive study of algebra and the solutions of more difficult problems may then be undertaken. It is not the purpose of this paper to outline the course for the Senior high schools, but it should be extensive enough to thoroughly equip students for the higher mathematics in universities.

The course which is here recommended together with efficient instruction will furnish the student with such training in algebra as will meet his needs. If this simplified course is followed in Junior High Schools, it will be possible to do such thorough teaching in algebra that the criticism of colleges and universities against the work of the high schools in this subject can no longer exist. It will make the subject of algebra interesting to the student and the teacher will not be forced to undertake an impossible task.

What Mathematical Ideas Should Be Expected of the Freshman on His Entrance to High School

Jessie Brakensiek, Quincy

A few years ago it was the fashion to decry the influence which the colleges have had in directing the curriculums of the high schools, and educators were roundly applauded for the stand which they took against the demands of the colleges. Today we are less afraid of dictation from above, for a college education is now no more a luxury than a high school education was a generation ago. When we see a fourth or a third of our high school graduating classes continuing their educations in higher institutions the next year after leaving high school, we begin to believe that the colleges have a right to make some demands in regard to high school courses, that a college preparatory course is as much a vocational course as is typewriting, cooking, or shop work. The writer believes the high schools have found the demands of the colleges wholesome, that the elementary schools would be improved

if they were, in a similar fashion, to heed the needs of the high schools a little more carefully. At present the high school is ground between the nether and the upper millstones. It must accept whatever raw material is sent it, and it must turn out in four years the finished product demanded of it by the universities and colleges, the normal schools, the technical schools, and the business world.

Of course, the grade schools are not to blame so long as the high schools suffer in silence and made no demands. It is about time for the high schools to let the grade schools know their needs. The writer will endeavor to summarize what she believes a pupil entering high school should know in the mathematical field.

1. A ninth grade pupil should have a perfect and ready knowledge of the forty-five fundamental facts of addition. Imagine trying to teach algebraic addition and subtraction without this foundation! Yet it is a general enough lack to be a real menace to high school work.

2. It would be much better if, in the grades, subtraction were defined from the view point of addition and accordingly taught by the Austrian method, thus eliminating the "borrowing" trouble and preparing the pupil for the algebraic idea of subtraction.

3. A ninth grade pupil should know the multiplication tables and the factors of numbers up to 100. The majority at present apparently deem it sacrilege to know any multiplication facts not given in the tables up to 12 times 12. For example, such facts as 3 times 16 and 5 times 17 are usually unknown; that 54 is 6 times 9 is known, but that 54 is 3 times 18 is unknown; and about three out of every four will say that 91 is prime.

4. In multiplying by 11 and 12, short multiplication should be used. Instead we see this:

$$\begin{array}{r} 915 \\ 12 \\ \hline 1830 \\ 915 \\ \hline 10980 \end{array}$$

5. A ninth grade pupil should use short division wherever possible. Instead we see this:

$$\begin{array}{r} 4)592(148 \\ 4 \\ \hline 19 \\ 16 \\ \hline 32 \\ 32 \\ \hline \end{array}$$

6. He should know the more common tables of denominate numbers. The city boy or girl almost never knows how long a rod is, how many square rods in an acre, how many feet in a mile. Of course, these facts are somewhat outside his experience, but still he does not know the number of square inches in a foot either. In fact, the only table that he does know perfectly is that of U. S. money. Put any problem that is bothering the pupil into terms of dollars and cents, and he'll get the right answer.

7. He should have the ability to use fractions intelligently. Few pupils entering high school have any clear idea of what a fraction is. A good many will tell you that a fraction is the "aliquot part of a number." Ask one who makes this reply what "aliquot part of a number" means, and you will get only a sort of accusing look, as if you were not playing the game fairly. Most pupils know that fractions must be changed to a common denominator

before being added, but few there be who can get a correct answer with reasonable speed. Some, however, merely juggle figures, getting such results as the following: 2/3 plus 2/5 equals 2/8. The product of two fractions is a difficult problem, and many times has the writer been assured that it is necessary to reduce fractions to a common denominator before one can divide.

When it comes to the decimal fractions, most of the pupils do not realize that they are fractions at all, and the decimal point is inserted in a haphazard way according to the promptings of the spirit.

8. A high school teacher has a right to expect a freshman to be able to do some work mentally. The average pupil is lost without paper and pencil.

9. The grade schools should be concerned with making automatic the mechanical processes in arithmetic. At present they appear too much afraid of memorizing. They seem to forget that, before one can reason, one must remember at least two things. There is no use turning the wheels of the reasoning mill until there is some grist ready. Often the pupils from parochial schools do very good work in high school mathematics, owing to the fact that they have memorized the facts one has a right to expect them to know and they are willing to learn others as need arises. The public school pupil too often does not have exact knowledge, and, what is worse, doesn't care to acquire any, for memorizing is considered drudgery.

10. A pupil should have enough training in the use of mathematical language so that he is not afraid of it. He should be able to state as well as to know relationships, he should distinguish between a sum and a product, the word "factor" should have a definite meaning to him, he should be embarrassed when he calls an *odd* number an *uneven* number. He should take pride in acquiring new words as they arise in his algebra and geometry. At present he tries to play the game without using the language of the game.

11. In fact, the troubles seem to the writer to indicate the need of clearer vision on the part of many grade school pupils and their teachers. Elementary and high school mathematics is a very simple subject, consisting, at most, of only seven things: addition, subtraction, multiplication, division, raising to powers, extracting roots, and making substitutions. A proper correlation of apparently different subjects would reveal their fundamental identity, and simplify the work immensely. The child is overwhelmed at present by learning how to do what seems to him an infinitely great number of different problems, and by striving to form petty rules for their solution. He needs to get down to fundamentals and to see things in their proper relationship. He needs to quit wanting a pattern problem for everything.

Then, too, many of the defects suggest a failure to test the fundamental operations for speed and accuracy. Weaknesses slip by which ought to have been detected and remedied.

The questions arise: Are these defects general? If so, would it help if this body of high school teachers expressed its desires in the matter of grade school preparation for high school mathematics and recommended methods of presenting subjects where there seems to be trouble from faulty presentation?

The writer desires to be helpful to that great body of teachers working in the grades, who are asked to be specialists in some dozen different branches, by putting before them a simpler expression of what things are fundamental in mathematics than is contained in the average city superintendent's course of study, and by suggesting methods of presentation which, based upon the fundamental truths of universal arithmetic, shall serve the purposes of grade school, high school, and college. It is her belief that such suggestions would be gladly received by the grade school teachers.

The Teaching of Elementary Algebra, First Semester

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It is not the purpose of this paper to discuss the content of first year algebra, or of first year mathematics. Many changes no doubt are needed and some of these may come soon, but others will be delayed for economic reasons. At any rate many of the high schools will continue, for a few years at least, to teach beginning algebra during the first year of the high school, and it is our purpose to discuss methods by which such teaching may become more successful.

We will assume, then, that we are teaching elementary algebra during the ninth year; that the content of the algebra follows the suggestions of important committees during the preceding decade; and that at least another half-year of the subject is offered before the end of the high school course. We will also assume that the work of the first year is grouped about three important things and that these three things are to be emphasized over and over. These are, (1) the equation, (2) the use of the formula, and (3) the application of the knowledge of algebra to concrete and practical problems.

I am wondering if we all realize that the high school freshman is offered during the early days of his experience in algebra a large percentage of the principles of all mathematics. Rules, definitions, and exercises are fed to him so rapidly that he soon cares little for the "why" of things, provided he can only learn to apply and use the mathematical truths he is expected to master. Would it not be better to plan our work so that some of these truths can be deferred a few weeks beyond their customary time of presentation?

We will consider several suggestions that are presented for your consideration with the hope that they will lead to better results. Since no teacher can do his best work till he knows the ability, or lack of ability, of the individual pupils of his class, we will consider first a method for class study and grading for the use of the teacher. Let us list the things that the pupil is supposed to learn, or should be able to do, during the first few weeks in the study of the subject. The more important of these are, (1) the sense of the literal number, (2) the ability to interpret the printed page, (3) the evaluation of algebraic expressions and formulas, (4) the equation, and (5) the translation of the language of the story problem into the equation. We might add to this list the ability to perform the fundamental operations of arithmetic, rapidity, accuracy, and a few others. Now let the teacher grade the pupil on the basis of his ability in these particular things instead of keeping daily grades. He should give grades in ten or more topics per month, at such times during the month that he can best estimate the grade. As, for example, if he wishes to determine the standing of the members of the class in evaluating algebraic expressions, he can estimate their ability very quickly by giving a few short exercises to be done in class the third or fourth day this topic is taught. He will give a grade in evaluation again three or four weeks later in the course. The grades in these topics can be averaged at the end of the month with the test grades to determine the monthly standing. The teacher's class book would, if used in this way, show the actual progress of each pupil of the class.

There are many little devices for keeping the interest of the class at high pitch. One of these that is an aid in the teaching of the story problem is quite worth while, and that is to require the pupil to write some of these problems for other members of the class to solve. As, for example, suppose I give my class the consecutive numbers 8, 9, and 10, and ask them to write a problem to be solved by an equation and such that these numbers are the answers. The pupil will discover that it is necessary to say something about 8, 9, and 10 that can be translated into an equation. He will learn also that all he says about 8, 9, and 10 must be true of these three numbers and no others. He will not need to call them consecutive unless he wishes. He can

say that the second is 1 more than the first and that the third is 6 less than twice the first. If he adds to this the fact that their sum is 27, he has his problem ready for the other member of the class to solve. It is interesting for the teacher to discuss such a problem and show that there are many sets of three numbers that satisfy the first group of facts, such as 5, 6, and 4; 7, 8, and 8; etc. Also there are many sets whose sum is 27, but there is one set only that satisfies all that has been said about the numbers. In a similar way we may treat other kinds of story problems.

The following problems were written by high school freshmen at the beginning of the sixth week of school. This was the first time they had attempted such work. They had about ten minutes of explanation the preceding class period.

The sum of three numbers is 48. If the second is 1 more than 2 times the first and the third is 1 less than 3 times the first, what are the numbers?

I have $1.80 in my pocket. If I have 2 times as many quarters as dimes, how many quarters and dimes have I?

Jane is 2 times as old as Mary, and Helen is 2 years younger than Mary. Find their ages if the sum of their ages is 38.

Find three numbers such that the second is 2 times the first plus 2 and the third is 3 times the first minus 4. Their sum is 76.

A boy riding on a bicycle goes 5 miles more the second day than the first and 6 miles more the third day than the second. How many miles does he go the first day, if he goes 94 miles in the three days?

Another device that will stir up a considerable amount of class interest is to teach the pupils to compose formulas that will be an aid in the solution of practical problems. This work is more difficult than the preceding and cannot be attempted till late in the semester. The use of the formula is first taught by evaluating in the formulas $A = lw$, $A = \Pi r^2$, $i = prt$, $d = tr$, $d = 16t^2$ and many others. Then as the work progresses more difficult formulas may be presented, some of them may be solved for other literal numbers, and the need of new formulas discussed. The class is now ready to attempt composing simple literal equations from given facts. The following exercises will make clear the method of treatment.

A merchant buys apples at c cents per bushel and sells them at k cents per peck. If he gains g cents on one bushel, express the fact by a formula. Write a formula to show the gain on b bushels. Use the above formula to find the gain on 100 bushels that cost $2.50 per bushel and were sold at 75c per peck.

A dry goods merchant adds 15% to the cost price of his shoes and 50c more. Write a formula that will give s, the selling price, using c as the cost price.

One of the great hindrances in the progress of the average algebra class is the superabundance of long and tedious problems and exercises and the scarcity of those that are short and simple. To be sure the longer exercise has its place and the pupil who makes his way through its many processes has gained much, but the pupil who attempts it and fails repeatedly loses more than the other one gains. For instance if a pupil works a long equation and fails to get the correct result because he does not know how to treat a parenthesis preceded by the negative sign, he needs drill in a number of short equations designed to eliminate his difficulties. There are so many principles and processes that must be emphasized again and again, that the long tedious exercise has little place in the work of the first semester. Even for the semi-monthly or monthly test, the short exercise is of great value. One of the most successful ways of giving a test is to read the questions and exercises to the class, allowing one minute or less for the pupils to write the answer. After twenty such questions and exercises have been read, there is still ample time left of the period for the pupils to exchange papers and grade them with

the teacher's assistance. The following questions and exercises are selected for such a purpose:

If a is 2 more than twice b, express the fact with an equation.

Find the value of x in $x - 3 = 5x - 9$.

If $a = -2$ and $b = 3$, what is the value of $3a^2b^3$?

What is the remainder when —6 is subtracted from —9?

Find three consecutive numbers whose sum is 57. (Allow three minutes.)

If a boy walks n miles per hour, how many hours will it take him to walk k miles?

How many feet will a stone fall in 5 minutes? Use $d = 16t^2$.

If the sum of two numbers is 12 and one is x, what is the other?

The practical applications of algebra must not be neglected. To be sure there are not many possibilities for real problems in first year algebra, but yet there is enough material to arouse a great deal of interest if we will use it. The formulas for areas; the interest problems; the rate, time, and distance problems; the lever problems; applications to geometrical figures; the laws of falling bodies;—these are some of the sources that will furnish simple exercises of great value. It must be kept before the mind of the pupil continually that in mastering algebra he is furnishing himself with a tool that will be an efficient aid throughout his whole life. There are good and sufficient reasons why every young person capable of doing so should study algebra. The experience in problem-solving enables one to think his way through many of life's difficulties, for the two processes of thinking are often very much alike. Furthermore a knowledge of algebra is vitally necessary for advanced work in science and mathematics. It is not our purpose to enter into a complete discussion of the reasons for the study of this subject, but we want to drive the point home that the enthusiastic teacher who knows his subject is worth while is sure for that reason to be the successful teacher.

There is one more device for stimulating class interest that I wish to discuss before I close. Divide the class into two divisions as nearly equal in numbers and skill as is possible and work one division against the other. Allow them to contest for a month for the highest number of points, giving a certain number each day to the division producing the best home work, etc. The rules and details can be worked out by the teacher to suit the needs of his class. I have known this plan to accomplish wonders in arousing a dull and lifeless group of pupils. As soon as it fails to add to the interest of the work, it can be dropped without hindrance.

Not all of the preceding suggestions are to be tried with any one class. In fact, I imagine that some of you will say that there is not sufficient time for these extra things. But sometimes the extra things save time instead of losing it. If your pupil has trouble with the digit problem, (assuming that you consider the digit problem of sufficient importance to teach it), teach him to compose three or four such problems, note the progress he makes, and decide then if it has been a waste of time. Then again we can save much time if we omit some of the unnecessary things that we now are teaching:— some of the types of factoring, complex fractions, addition of fractions whose denominators are not monomials, and many others that either are of little use to the pupil or can be learned in the third year. Do not consider that we should do away with all complicated forms. They have their time and place, only they should not be overdone during the first year, and certainly do not belong to the work of the first semester. Let us teach our classes those things that will be to the advantage of the individual members of the class, and have faith in ourselves, and inspire them with faith, that the results will be very much worth while.

Construction Work in Solid Geometry

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"To measure is to know." Thus spoke the great Kepler some three hundred years ago. I shall take his words as my text and shall endeavor in the brief time allotted me to discuss the effect those words have had upon my method of conducting construction work in solid geometry classes.

In the eventful year of 1914, I joined the Mathematics Staff of the high school in New Castle, Pennsylvania, as commanding officer. My first campaign led me into the fields of Euclid, directing a company of so-called "flunkers" in second semester geometry. The morale of such a company, as might be expected, was at the breaking point. Regulation drill work as outlined by the textbook writers on geometry was out of the question. I must seek a new method of attack. For a while, I must confess, I was at a loss how to command the company. One day as I was reading a book on geometry I saw the words of Kepler, "To measure is to know." Surely there is truth in this statement I thought to myself, and the words kept ringing in my ears, as they still do. It was not long before I was asking myself the question: "Does it mean that if I give my students more measuring work in geometry they will know more geometry?" I tried it out and found my new method of attack.

Every day I required my class to measure some geometrical magnitude. At one time they were sent to the blackboard and required to construct a square *16.5 inches on a side,* not simply to construct a square; at another, they were asked to determine the area of all the blackboards in the room to the nearest square inch. It was not long before I had some real enthusiasm in this "flunkers" class. Near the close of the course the spirit ran high and when the last recitation was over a goodly number of the class came to me personally and said that they had not only enjoyed the course but had really pursued it with understanding. More than twenty-five percent of the class continued in their geometrical studies by taking the course in solid geometry, an elective subject, which I accepted as additional proof of the sincerity of their remarks. Measuring magnitudes, drawing to scale and to specifications in plane geometry convinced me that Kepler's words were true. No sooner proved in plane geometry, I applied the same methods in solid geometry with the same results, and thus you have the historic introduction of the construction work that is to follow.

It has been my experience in the past that one of the benefits to be derived from a High School Conference of this nature is to hear someone relate definite classroom methods in a particular part or branch of a subject. Such will be my procedure.

The first part of the course in solid geometry, usually designated as Book VI, deals with lines and planes in space and offers little opportunity for interesting construction work. I require only one model in this division of the subject, namely a model to illustrate the theorem: If a line is perpendicular to each of two other lines at their point of intersection it is perpendicular to the plane of the two lines. This model is made according to specifications, insuring uniformity, and I make a freehand sketch on the board to show the class just how I want it made.

Though the remaining exercises deal entirely with polyhedrons I do not wait until I reach Book VII in the textbook before I begin operations in constructing some of the simpler polyhedrons. Two reasons may be given for so doing: (1) The work in polyhedrons offers excellent opportunity for the use of algebra and the sooner you can show the student where he can use his algebra as a *tool* the more interest he will take in the entire course; (2) I require each pupil to make ten models, one per week, and as ten weeks cannot be given to the study of polyhedrons if you would cover satisfactorily the subject of solid geometry, as ordinarily outlined in the average textbook, there

must be an overlapping and I have found it better to do so in the beginning of the course than at the end.

Exercise No. 1 (as you have it before you) reads: Required to construct a cube whose volume is ten cubic inches. To determine the length of the edge of the cube requires the solution of the equation $e^3 = 10$. Solving for *e* we obtain $e = \sqrt[3]{10}$ or 2.154 approximately. The approximate answer raises the question as to how the student is to extract the cube root of ten. Personally, if my class is not familiar with the use of logarithms I spend one or two recitations in explaining their use and you would be surprised how quickly this powerful computing tool is successfully operated by the average pupil. He does not need to know all about logarithms to be able to *use* logarithms. If he has access to a table of the powers and roots of numbers (which table ought to be in every high school textbook in mathematics, as well as a table of logarithms) he may use *it* to find the value of $\sqrt[3]{10}$. I require the approximate result to three places of decimals so that the nearest hundredth of an inch in the length of the edge is determined.

Next I impress upon the class the fact that they must draw to scale with greater accuracy than they have been accustomed to, the error allowed being one-hundredth of an inch. To insure such accuracy the diagrams are drawn upon a good quality of cross section paper (Eugene Dietzgen Co. No. 350). This is a tracing paper and therefore allows blue-prints to be made from the original diagram, a feature which I strongly recommend because of its duplicating powers. If an especially good diagram is submitted by a pupil the instructor can make several copies of the same for purposes of instruction or exhibition. Then, too, I find the easiest way to check up a diagram of some member of the class is to superimpose my own drawing upon that of the pupil, and if both coincide throughout I accept the pupil's drawing. This method is possible because the paper is semi-transparent.

After the diagram has been presented and approved the pupil uses it as his *pattern* and the real construction of the cube is begun. It is made out of a good drawing paper (Eugene Dietzgen Co. No. 5 "Napoleon"). The pattern is placed upon the blank drawing paper and by means of a well sharpened pencil (4 or 6H) the necessary points are transferred by a slight downward pressure. The points are then joined by the required lines and thus the entire diagram is transferred. Perhaps you are wondering why I insisted upon a good diagram on the cross section paper, only to be transferred to the drawing paper. The reason is simple. If the first model presented is not accepted, which is often the case with beginners, the time and effort required to make the original drawing is not lost. It is only a matter of using the *pattern* a second time. With the aid of a pair of scissors the diagram is cut out along the boundary lines and where folding along a line is necessary a knife is used to make a shallow cut. It has been my experience that the use of flaps in joining two edges together is better and makes a neater model than the use of gummed paper. Either glue or library paste may be employed as an adhesive but I find that the paste has a tendency to dry out in time and the model comes apart. The cube is now complete and if satisfactory is accepted and the pupil assigned a new construction exercise. Thus you have the "life-history" of a model cube.

Of the thirty exercises that I have designed for this construction work in solid geometry, you have fifteen before you and you may judge for yourselves the type of mental effort required for their solution. It is plain to be seen that some are more difficult than others and naturally I give the former to the better students. In a few instances the determination of the formula for solving the unknown edge is so complex that I give the pupil the formula, but he still solves the approximate answer himself. I have in mind Ex. 21: Required to construct a regular icosahedron whose volume is ten cubic inches. In this exercise I give the formula, $V = \frac{5e^3(\sqrt{5} + 3)}{12}$, from which the approximate result for *e* is obtained when $V = 10$. Occasionally I have in my class

a pupil who has studied trigonometry or who is taking it along with his solid geometry and in that case I try him out to find his own formula, and it is indeed gratifying to see the light of success in the eye of the young computer when he exclaims, like Archimedes of old, "Eureka!" (I have found it!) I sometimes think that we make our courses in mathematics too cut and dried, not giving sufficient opportunity for the exceptional mind to cut his own path into the beautiful field of number relations.

After each member of the class has constructed eight exercises out of the thirty he is asked to design and construct two original models, working out any ideas he may have or be interested in. The results obtained are, in my opinion, very profitable, for it allows the student to express himself mathematically, to use his own mathematical wings, as it were. It is amazing what wonderful concoctions are fabricated and what gifts are laid upon the altar of exact thinking.

In conclusion let me summarize some of the values to be realized from the course of construction exercises as outlined above. (1) In the first place the class really enjoys building mathematical models. It ministers to the building instinct found in every normal boy and girl. As the little child delights in making houses out of blocks so the larger child finds pleasure in giving tangible form to his ideas. When once you have your pupil liking his subject you have given him a decided impetus toward progress in it.

(2) The value of fixing the meaning of geometrical terms cannot be overestimated. I firmly believe that a student definitely knows what a truncated right triangular prism is after he has made one and that he will retain that knowledge for a greater length of time. Furthermore, he receives a training in exact measurement and constructs according to specifications, lessons he will not soon forget.

(3) All models have a volume of ten cubic inches, making them equivalent solids. This offers an excellent opportunity to train the mind in space relations. I find that my students have a much better conception of size and volume, of three dimensions, if you please, which is a most important conception in the study of solid geometry.

(4) We are beginning to appreciate the problem of individual differences in classroom instruction. Here is ample room to apply this new idea in pedagogy. In assigning the various exercises you can give the good student the more difficult models and the slow plodder the easier ones. Both types are kept busy and up to their ability.

(5) Finally, you have a large collection of geometrical models which can be used to great advantage in explaining the theorems in the textbook; make fine material for a mathematical museum; and in the event that your school opens its doors to the community for inspection you have the substance for an interesting and elegant exhibit.

Lest in my enthusiasm I have caused you to believe that I have substituted for the logic of Euclid a course in model construction, let me emphatically state that such is not the case. A rough estimate of the time consumed in the work as outlined would place it at from fifteen to twenty percent of the time of the entire course in solid geometry.

If I have given you food for thought my mission is fulfilled. But before I leave you I want to give tribute where tribute is due. How far that "candle throws his beams!" The candle—Kepler, and the beam—"To measure is to know."

Construction Exercises

1. Required to construct a cube whose volume is ten cubic inches.
2. Required to construct a right prism whose base is an equilateral triangle, altitude three inches, and volume ten cubic inches.
4. Required to construct a right prism whose base is a regular pentagon, altitude three inches, and volume ten cubic inches.

7. Required to construct a right circular cylinder whose altitude is three inches and volume ten cubic inches.
11. Required to construct a parallelepiped oblique in three directions all of whose faces are congruent polygons, volume ten cubic inches, and all of whose face angles at a trihedral angle are sixty degrees.
12. Required to construct a regular tetrahedron whose volume is ten cubic inches.
14. Required to construct a regular quadrangular pyramid whose altitude is three inches and volume ten cubic inches.
17. Required to construct a regular octagonal pyramid whose altitude is three inches and volume ten cubic inches.
19. Required to construct a regular octahedron whose volume is ten cubic inches.
20. Required to construct a regular dodecahedron whose volume is ten cubic inches.
21. Required to construct a regular icosahedron whose volume is ten cubic inches.
25. Required to construct a frustum of a regular hexagonal pyramid whose volume is ten cubic inches, area of upper base two square inches, area of lower base five square inches.
27. Required to construct a frustum of a right circular cone whose volume is ten cubic inches, area of upper base two square inches, area of lower base five square inches.
29. Required to construct an oblique prism whose base is a regular hexagon, altitude three inches, volume ten cubic inches, and one of whose dihedral angles between the base and a lateral face is sixty degrees.
30. Required to construct a truncated right triangular prism whose lateral edges are one, two, and three inches, respectively, whose base is an equilateral triangle, and whose volume is ten cubic inches.

Brief of a Talk on "High School Mathematics in Relation to the War"

By W. T. Felts, Carbondale

Very difficult to find suitable and reliable material. Very little has been published. Brevity of time prevented a questionnaire. Had very little opportunity to observe. Information first hand from officers limited. Must fall back upon opinion and deduction. In this one man's opinion is as good as another's. No standards of values are evaluating. The contribution of mathematics yet fixed. Students of mathematical values naturally like to think in terms of norms,—none yet fixed.

In looking for the values of mathematics in the war one must not attempt to justify the study on that ground.

Shall view the subject from two angles: (a) Contribution of Secondary Mathematics to the War, and (b) The Reaction of the War upon Secondary Mathematics.

I. In any study of this kind it is difficult to isolate High School Mathematics from Higher Mathematics on the one hand and Elementary Mathematics on the other.
   1. Secondary mathematics made little direct contribution to the war. Its chief value lay in its being a necessary link in the mathematics chain.
      A. Ability to apply and evaluate formulæ necessary.
      B. Close alliance with Physics and Chemistry enabled it to function practically in those fields.

C. As a vital element in engineering, navigation, gunnery, range finding, etc., it made a valuable contribution.
D. A fundamental element in ship, aeroplane, gun, engine, etc., construction.
E. Mathematics even contributes an element in map-making and maneuver.

To say mathematics won the war would be a statement to be challenged. But no more so than to say that food won the war, ships won the war, etc.

2. Mathematics played an important part in all forms of engineering and machine construction—steam, electrical, aerodynamics.
Ed. Bidwell Wilson calls attention to three type phases:
A. Bold adventure.
B. Mathematician and Physicist construct a theory to eliminate defects of construction.
C. Scientific and technical knowledge becomes codified.

3. Mathematics constitutes important part of military and naval officer's training.
A. Report on West Point to World's Mathematical Congress at Rome 1905.
General Joffre's tribute.
Mathematical "Mode of Thought" (J. W. A. Young)
Problem Strategy and Battle Strategy
Soldiers and Mathematics—Napoleon, Grant, Lee, McClellan, Garfield, etc.

4. Mathematics requirements in training camps. High school mathematics the minimum requirements. The mathematical "iron ration" in most officers' training camps.
A. Great Lakes Naval Station—35 classes
Algebra through quadratics
Plane trigonometry
Plane geometry
Arithmetic—multiplication, division, greatest common divisor, least common multiple, fractions, decimals, mensuration, foreign money.
Algebra—gen. nature, fundamental operations, linear equations, applications of linear equations, fractions, similtaneous linear equations, square root.
Trigonometry—Right angle triangles and applications, logarithms.
B. Municipal Pier.
Trigonometry
Navigation
Arithmetic
C. Annapolis. 14 wk. course
Geometry and Trigonometry
Definitions and Use of Logarithms
Application of Variations
Deviation and Compass Error
Plotting positions and bearings
Laying courses, chart-making
Dead reckoning, comparison of Chronometer and Correction by "noon tick"; conversion of arc to time, local to standard time, mean to apparent time and finding G. M. T. corrections to observed latitudes, meridian altitude of sun and reduction to meridian.

5. Firing data—Very important in field artillery of 3-inch type. Important to get the "drop" in opening salvo. Evaluate formulæ and set the pieces.

II. Probable Effect of War on High School Mathematics.

A. Will tend to practicalize mathematics.
This may be dangerous for high school mathematics unless handled by scholars.

B. Will vitalize the subject.
Will motivate it more highly
Testimony from England
A young man who mastered practical trigonometry in a week.

C. Will probably reorganize high school mathematics.
Will it unify or more highly specialize; opinion now in a state of flux.

After a 10 minute recess followed by announcements, came the discussion. The notes on these discussions are as follows:

Dr. E. B. Lytle—University.

In first paper, "speaker believed in emphasizing principles"—how would he do it. Implication was use of simple problems. Mental arithmetic not entirely disappeared—is coming back—as evidenced in new textbooks saying these problems to be given orally.

"Oral Algebra"—Book published.

Try this experiment. Have them list principles involved in elementary algebra. Students do not appreciate the principles—should make them full principles.

To students poor in algebra. What is Algebra? What can we do in algebra? Bring out seven operations.

2. Paper impressed unusually well.

Core was greatest difficulty we have in mathematics; that is, students do not get meanings out of things.

Illus. Trig. teaching. One student having trouble. What is sign of angle $\frac{a}{b}$ a = oppos. b = hyp. A is a line; b a line. Line is a line over a line. He did not realize that *a* was the measure of a line (a no.) and $\frac{a}{b}$ = a ratio.

3. Find out here why we get good students from New Trier. Emphasis on the meaning of things—the reality.

Miss Marie Nelson—Quincy, Leader.

I find children come with perfect horror of algebra, afraid of arithmetic and do not understand language of arithmetic. Get them out of that idea. Do not bring in Def. right at first. Can be brought up while others are at board. Interest comes through doing thorough and careful work. Thorough from very beginning—impress it upon pupils. Never found making up problems or dividing classes against each other—formulas profitable—successful. Memory work to come after a thorough understanding of the material. Principle for rules of + and — numbers are not hard after thinking them out. Transposition—term is not needed. Give them the meaning.

Mr. Newell—Northwestern.

Evanston 2/5 of all 8th and will take all 7th next year. Outline of 7, 8, 9th grade. Have teachers over country get together and agree on. It is a matter of individual school.

Has Springfield published its outline.

Has he found he could teach arithmetic better by H. S. plan. One teacher for all arithmetic—one for geography, etc. Try out H. S. so each subject could be taught by a specialist.

4. Would it not be possible to teach algebra with 8th grade arithmetic—by formula—but not saying anything about it. Areas and volumes.

Mr. Scott (John L.)—Springfield.

Trouble in preparing paper.

All the time must keep fighting to stick to subject and not tell how to teach—that in which he is supremely interested. I have no knowledge of consultation or agreement among Junior H. S. in Illinois. We have no set outline for Junior H. S.—nothing printed for Springfield. Timely that it should be done I think. As a result as consultation of people conducting such schools. Departmental work is the thing that justifies Junior H. S. work. Easier to take 3 mathematics teachers and get them to do the principles so it will make a basis for courses to follow. Go over in such a way by oral and written work until fix thing in mind of pupils. Seven operations we have reduced to five. Add, subtract, multiply, divide, and 5. When to use it. Reduce the thing to more of a science and find if pupils are getting these fundamental. We have an especially strong teacher. That is after all the root of the matter. The future of Junior H. S. is to rest upon Departmental work in all lines. In own school emphasize fact that no teacher limit her work to just one grade, one semester, the teaching of 7th and next 8th, acquainted with pupils and broaden teacher in her work. In departmental work we emphasize proper use of supervised study. 70 minutes for each period. Begin 8:30 and have five periods during a day. Preparation of greater part of lesson under direction of the teacher. Formula in arithmetic. I've no objection really necessary—(Illus. $\pi r^2 = \odot$ in arith., alg., geo. all) should be taught by formula but formula should be interpreted. Use x in the proportion by calling it the unknown but not algebra. Some geometry should come into arithmetic but don't call it geometry. Divide line in two and three equal parts. Mean proportional also.

Mr. Taylor—Charleston.

Reason for failure in alegbra in 7th and 8th grades has been because we have a chapter or two of abstract algebra. Everybody knows pupils behind by 1 year 8th grade children in other countries because havn't had a chance at simple introduction to algebra and

geometry. Know fundamentals in arithmetic. Ratio and proportion, percentage, sq. root and mensuration only think added in 7th and 8th. Takes us no where in arithmetic and business either.

Factor sum and div. of cube or Trinomial. Solve general quad. by completing equation, could all min. proff. Solve $a^3 - b^3$. Study the quadri equation. Important fractions are mon. denominators.

Hope 2nd papers will be elem., and grammar teachers will get hold of it. Good advice comes from nom. to H. S. and hence perhaps from H. S. to Elem.

Mr. W. T. Feltz—Carbondale Normal.

2nd paper. Thought met an old friend, a life-long acquaintance. How many here have had the very experience. Most every one. As a quick mental reaction we don't get it. Typical experience (but not all boobs) H. S. Grad. wanted to be excused from all arithmetic. We prepare teachers for elem. schools. Asked her questions. Could not answer questions in percentage and back to add in fractions. $2/3 + 5/6$. Could not add. She was going out to teach boys and girls. Statement about short division. 29
13 make a record of 1 they carry over. Reason we don't set up an objective. I don't know where I'm going but I'm on the way. Locate decimal point in division of decimals and if I don't do it today will finish tomorrow and this is the way I am going to do it. If it doesn't work have alternative.

1.728 5 shifting of decimal places.
1.414

Only 6 out over 60. 7 not one right
I have three processes in arithmetic.

1. Accumulation aggregation.
2. Disappa disapating, sub-div. evolution.
3. Balancing.

x equation. a math. Monkey wrench.

$d = 2r$. $c = 2\pi r$. Effective transition from arithmetic to algebra.

Chairman.

Can we get Miss Brakensiek's paper before elementary teachers.

Felts.

School news reaches many.

Mr. Newell.

Will see Hollister will leave the printing if it comes as a strong sensus of opinion of this section as a pamphlet.

Mr. Harper.

That we request this be printed.

Newell.

This movement of Uni. of Educ. Bureau is important for us. Jr. H. S. each working for itself in its own locality. Get out of that notion all get together and support the bureau—put up to them the question why we have not gotten together. Let them report and investigate. Let us aid by demanding such for Illinois. I propose that we put up to this Bureau two or three problems that interest us. One to be the Jr. H. S. problem. Will have it formulated by night.

Mr. J. R. Clark—Chicago Normal School.

Ref. to method of teaching—making material vital.

1. Interest—Sept. Educ. Review will probably proceed now.
2. The project method. (How attack—shop work). Columbia behind it.

Introduce the formula formation by finding some problems calling for its use.

Suggest one very fruitful topic apropos and Mr. Newell. "Ways and means of organizing algebra, geometry, and Jr. H. S. matter could be present to get the maximum appeal to pupil."

Illus.—Building a house—Deed—Fire Insurance, etc.

Dr. Lytle.

In behalf of Dr. Buckingham, I am sure Dr. B. will welcome the proposal of any problem. The department will have special interest in mathematics as this 1st Assis. has specialized in and prepared to teach mathematics. But let me urge that things put up are put up in specific—definite way, not in broad, general way. "Is Dept. method of teaching arithmetic getting any better results than the old general method. After programs are in use he will investigate by statistics. He will take up project method by testing result. Facts wanted.

Mr. E. W. Schreiber—Maywood Township H. S.

Int. experiment large H. S. in east gave general informal Test. One problem—multiply 787 by itself three times. Over 765 students. 65 per cent did not secure a correct answer. One reason why. I find in talking with teacher give good value to method. I give no credit except for exact result. Illustration—Quebec Bridge and problem of getting center of suspension hung. New York Eng. and money. Two sides built—big crowd to see center hung. When something snapped—11 men killed—center dropped. Will you give those N. Y. Eng. credit for the bridge a tendency to give some credit for reasoning. There are two sides to the question. But if I tell my students they must get correct result he is going to come up to that standard. Graphing not taken up in 1st sem. How are + and — numbers pre-

sented them. Most conclusive method is the graphic method. Trip from Tuscon, Ariz., and Los Angeles.

2000	140′	Col. Sea Level	Imperial valve Depression 2021	200 ang. above sea level

represent by profile drawing. Is it possible to represent elevation and depression without using graph?

Mr. Harper.

It is in the Def. of wood graphs as the locus line of two equations. We use it sure in signed numbers. In teaching + and — numbers we use (1) Theorem str. (2) horizontal line. My idea of graph in elem. algebra is Locus idea. First access in Idea of two variables. Want to say 1 or 2 things more.

If a Rep. of a foreign government would think we were teaching a lot of very poor prepared pupils. British come to visit our school. In talking to members of that Com. was agreeably surprised to see the amount we do in second schools and the results we get, should he know everything in 9th year that he was taught in preceding years? More than 80% on 2/5 +½. Correct splendid school. Go before Woman's Club and you would get

½ + 2/5 = 5/10; 4/10; 9/10.

Last evening's audience even might have found some incorrect answers. 8 × 9 is or are 56 given to Eng. teachers will catch one-half of Eng. teachers.

We want to get rid of all objections possible but come to earth and don't expect too much.

Commission our teaching of Math., Fr., Eng., Geom. Bevitz criticized results in their schools the same as we do here.

Business—Chairman.

Appoint of Nom. Committee to fill vacancy on Com. of 3.

Mr. Taylor
Mr. Lytle
Mr. Harper

Some extra reports on Com. of Math. on table. Take them. Nothing proved but quite interesting.

Noon

1st paper—"To measure is to know," Kepler.

Discussion—Tetrahedron 2. Volume of Icosahedron formula given in Trig. class, also duodecahedron.

Mr. Newell—Northwestern.

Manual Training can cut many of these solids.

Illus.—Volume of triangular prism—3 pyramids. Only thing he does do with Devil's Coffin. How many planes can cut tetrahedron and cube into. Gives a notion of symmetry necessary for drafting. Regular solids are cubes as cubes. Tetrahedron built into octahedron. Perspective drawing.

Chair.

S. Geom. best to teach close thinking. We don't know what is practical. Some things which we may think impractical turns out to be practical.

Dr. Lytle.

I've been wondering if relation of this paper to project teaching. Would ask Mr. Clark if this is a concrete illus. of project teaching in Solid Geometry.

Gen. its a concrete problem of making something. Is this an introduction to project teaching?

Mr. Clark.

Depends upon the approach and how assigned. If point of view is study the space relations and then if teacher gets in background—pupils decide to do a certain thing and to assist in formulating plan. Teacher gets behind the class. Class chooses. Largely a matter of initialing the thing.

Boomlang—How far carry use of concrete and where the abstract? De we carry concrete too far?

Business.

Report to the nominating Committee.

Mr. Austin to serve three years.

Accepted.

Two questions presented.

Mr. Newell.

Moved Sec. be requested to present to Mr. B. and ask for a report at our next meeting. Seconded. Carried.

Lytle—Third paper.

Experience here at U. of I. in teaching S. A. T. C. mathematics. Orders from Washington made by Army men. Advised by Committee of math. but over-ruled. Spirit in order was to cut math. to things that are usuable. Result, difficulty teachers have had in getting the point of view. Give them rule of methods. Hard for teacher to adjust to new method.

Effect of war, may be to convince some of us that we can cut out some things and go faster. He has been a little converted but yet confused as to which is deemed better. Cannot check results due to disorganization, due to flu, and impossibility to keep boys in classes.

Chair.

Feels danger of cutting algebra course too much.

Schreiber.

Motive—27 lessons covered first two years of H. S. mathematics. Had been a flunker covering three semesters of H. S.

Felts.

What did you get out of mathematics? How heavy any army trucks can be put over this bridge? He takes measurements and computes stress and find it fast.

Mr. Clark.

Questions we wish to consider for next year.
1. Project teaching.

12. Modern Language Section

The meeting was opened at 9 a. m. Miss Lydia Schmidt was appointed chairman in the absence of Miss Blenda Olson. Professor Fitz-Gerald made several announcements after which the morning's program began. The first paper on the program by President Wm. B. Owen, Chicago Normal College, follows:

The Place of German in Our High Schools After the War

It need hardly be urged that the question of the teaching of German in the American high school is a difficult one. The great war has entirely changed the relationships of the nations to one another. The whole question of world commerce and international exchange of ideas and goods has gone onto a new basis. In considering the place of German instruction in our high schools, certain fundamental positions should be taken and made definite and clear. These positions may be stated as follows: First, Germany, by her actions in starting the war, has forfeited her right to the hospitality of the American mind. It has been clearly revealed that she intended to use her language as a means of gaining control over American thought and thereby over American action. In other words, she used her language as a means of propaganda. Having thus taken advantage of the hospitality of America, to do America harm, she must now show a radical change in intention and conduct before she could be given anything like her previous privilege. This means, then, that instruction in the German language, at least for the near future, should be restricted narrowly to the limits dictated by the needs of our future intercourse. Now the advantage that Germany enjoyed in our previous instruction depended upon the presuppositions made in teaching the language at all. It was assumed that the teacher of the German language was able and desirous of giving a fair interpretation of the significance and value of German culture. Such a fair interpretation was possible only for one who was not prejudiced in favor of Germany, her form of political and social organization, and her plans for world contest. There is no doubt that many Americans were deceived in these respects by their interest in and devotion to the study of German life, institutions and language. Many patriotic teachers of German, with all sincerity, emphasized the good things in German life, and ignored and belittled those vicious tendencies which the world war has brought to light. Such patriotic teachers may be regarded as excusable, that they did not realize that any

government could be actuated by such far-reaching and subversive plans. No doubt, all such teachers have been put on their guard. The difficulty with our teaching of German before the war was that we gave a German interpretation of German life instead of a critical American interpretation. It will be impossible for any intelligent and loyal American of this generation to misinterpret the intent and plan of the German people for world contest. The evidence is all in. It is evidence given by the Germans themselves. Their ambitions, which formerly were looked upon as idle and empty dreams, created by a people intoxicated with their own success, are now known to have been the serious intentions of a practical people bent on securing world domination. Their philosophy of the state and of government, their proclamation of the gospel "might makes right," furnish us a fundamental basis from which to judge their subsequent acts. If German, therefore, is to be taught at all in America, it must be taught by teachers whose loyalty to America is beyond question. These teachers must have more than loyalty of affection and intent, however. They must be thoroughly informed and competent critics of German thought, German history and German collective activity. The teaching of German, therefore, will take on the nature of an introduction into the life of a people who transgressed all the laws of humanity, broke all public faith, and ruthlessly disregarded the interests of all other peoples in order to accomplish their own selfish purposes. The study of the German language is the study of the language of a hostile people. The purpose in studying it would be rather to be more intelligent about an enemy than to be capable of communicating with a friend. The study of German in the past has been one of suggestion rather than of direct propaganda. All such contamination by suggestion must be thoroughly and effectively guarded against. The teacher of German must be a competent and informed critic of German life rather than an enthusiast for it. It is hard, I know, to teach a foreign language when one is not in sympathy with the life of which the language is a reflection, but the method must not pervert and obscure our purpose. As to the native German, whose loyalty to the American government has not been made absolutely clear during this contest, there can be but one decision. Under no circumstances should he be allowed to teach German in the American public high school. Only American teachers should interpret German life to American children. All modern language teachers lay emphasis on the spoken language, on accuracy, of pronunciation, and the like, but we cannot afford to sacrifice the American point of view in order to get perfection of pronunciation. We can adopt the method of the European countries who train their native teachers in foreign languages by sending them abroad and giving them a modern phonetic training. Our instruction in German should lead us to understand the Germans, not to imitate them. It should not even lead us to sympathize with them. This, then, is the first fundamental principle. *All possibilities of German propaganda should be removed from our German teaching.* The first step in this direction is to insure that only thoroughly American teachers trained not merely in the German language, but in the issues and actions of this war, should be allowed the advantage of an American public school. This does not mean, of course, that we are to use the class room in order to instill international hatred or to incite blind revenge. It merely means that we should profit by the lesson of this war, so as never again to permit ourselves to be accessible to the vicious and hostile propaganda of a foreign people. The line is perhaps difficult to draw but it can be drawn.

The second fundamental principle is this: The literature and text used in the schools should be selected out of modern German writings. These writings should be carefully and judicially annotated to bring out the real nature and character of German thought. We must not commit in our schools the fundamental psychological and historical error of accepting everything written in German as reflecting the Germany of our day. If it be true that Goethe and Schiller portray a nobler German mind, the bald fact is that they did not

operate on the modern German mind to prevent its debasement. Not being powerful to prevent the apostasy of intellectual Germany, why should they be made a part of our own educational pabulum. It may be true that modern Germany has repudiated Goethe and Schiller. As a matter of history this fact may be of interest. The conclusion, however, to draw is that the greater the gulf that divides modern German thinking from the great classic period, the greater the need of our dealing with the modern German thought rather than with the earlier thought.

If we accept these two fundamental principles, we can move ahead cautiously and carefully to put German teaching on a sound educational and national basis. America cannot dispense with a knowledge of the German language. Many groups of people will need it for their special purposes. They should be given opportunity of studying it for these purposes. In higher education, students of history and social sciences, of the physical and geological sciences, of psychology and engineering, will need access to the reports of the work of German scholars. Just how much commerce we shall have with Germany in the next few years, no one can tell. Should such a commerce be developed we shall need to know the German language. Always keeping in mind the specific purpose for which we study the language, we shall not be in great danger of a misuse of it. German as a means of the general humane education of the modern American youth, has been dispensed with by the war. The instinct of the people in this matter is sound. We want to be sure that we are not being made the victims of a peaceful penetration. Germany must first reconstitute her political and social life and show works meet for repentance. The old days of enthusiasm for Germany and all things German is gone forever.

This first paper "The Place of German in Our High Schools After the War" was read by Mr. J. R. Clark, of the Chicago Normal College, in the absence of President W. B. Owen. In the discussion which followed there arose the question as to what were the "modern authors" to which the writer had reference when he advised the reading of them. Miss Doniat spoke of "Hoher Als Die Kirche" as one book which the author had previously declared unsuitable for the class room. Miss Walker suggested that we should not read modern authors to the exclusion of Goethe and Schiller. Professor Goebel continued this same line of thought, that the deepest and truest sentiments of humanity are to be found in the classical writers and for that reason we should study them in our high school courses rather than the modern writers, who have allowed political ideas and aspirations to creep into their work.

Miss Schmidt read a few quotations from a report made by a committee in Great Britain which had inquired into the modern language situation in England in 1918. It stated that a democratic government required an instructed people and that both classic and modern German should be studied in order to understand rightly the people of the country; French will be the language of prime importance, it added, with German, Spanish, Italian and Russian varying according to size of area and their culture.

Dr. Koller mentioned a report also made in England by a British Board of Education requiring modern languages to be taught on a scientific basis.

The next paper on the program was

"The Place of Italian in the High School"

by Professor Olin H. Moore, of the University of Illinois. The paper follows:

Despite our awakened interest in the affairs of Italy, the Italian language is still taught in only a few of our secondary schools. This situation is the more remarkable in view of the fact that the large Italian population in the United States is rapidly increasing in prosperity, and consequently in ability to patronize the schools.

Manifesting a spirit in marked contrast with that of the pan-Germans, the Italians have generally been eager to learn English as rapidly as possible, and have prided themselves on their Americanism. That the Italians in America have at the same time not lost their natural love for their beautiful native land is evidenced by their early response to the appeal of the Rome government for troops to fight the Austrian oppressor. The Navigazione Generale Italiana and other lines took back hordes of Italian "richiamati," who returned enthusiastically to defend their sacred soil, cheering with Italian lustiness every American flag which they passed on the way.

We have therefore a splendid nucleus for the study of Italian in our schools. In a few of our schools—particularly in the grade schools—Italian is already taught. In New York, classes in Italian are offered in one or two schools. In Boston, the Hancock School, located on Parmenter street, has 206 pupils in Italian. In the Boston Central Evening High School, there is a class in Italian with about 25 pupils in attendance. Italian is also taught in schools for emigrants in a number of cities; and for the social worker a knowledge of the language is almost indispensable.

Nevertheless, the rightful place for Italian is not in the grade schools, where the time allotted for English is already too short. It should be taught in the day high schools, and there the provision for it is altogether inadequate. In fact, even in a great majority of our universities and colleges, Italian is regarded at best as a sort of tail for the French kite. It will be a calamity if the war does not open our eyes to the importance of the language of the country, which is, after France, our chief ally on the continent of Europe.

Italian should be studied, not only by the blue stocking Dante societies of a few cities on the Atlantic coast, but also by the largest possible proportion of our ambitious youths, whether their aspirations be commercial, or scientific, or artistic.

Much has rightly been said about the study of certain foreign languages as instruments for obtaining our share of the world's trade after the war. Spanish merits our consideration, because it is the tongue of the vast empires of Argentina, Chile, and nearer at hand, Mexico. Portuguese is the tongue of the greater empire of Brazil, having an expanse almost as great as that of the United States including Alaska. As such, it deserves a place in the curricula of all our important commerce schools. However, let us not overlook the claims of Italian as a language to be possessed by the shrewd Yankee trader.

Italy is a first class power, with a rapidly growing population of nearly 40,000,000. Teeming with ambition to be at the forefront of the world's activities, she is rapidly changing from a purely agricultural to an agricultural-industrial country. How important has been the industrial expansion in Italy may be discerned from a few statistics, which are here quoted from *Italy Today*, a fortnightly bulletin of the Italian Bureau of Public Information in the United States.

The present wealth of Italy is about 90,000,000,000 lire, or $18,000,000,000.

From 1904 to 1911, the number of industrial enterprises in Italy increased from 117,341 to 243,926, or 107%.

Not only was there a gain in the number of the enterprises, but also in the importance of the undertakings, as is evinced by the fact that the horse-power employed increased from 734,272 in 1904, to 1,620,400 in 1911, or 120%.

In 1904, 1,215,109 Italians were employed in industrial undertakings. In 1911, the number had increased to 2,304,438, or 80%.

On account of the acute shortage of shipping tonnage in the world, it is worth while to note that Italy is a next door neighbor—comparatively speaking—being hardly more than one-half as remote as Chile or Argentina. A glance at the map will remove many similar popular misconceptions regarding distances of foreign countries.

Heretofore, Italy has looked largely to Germany to supply not only her manufacturing materials, but also her banking facilities. The success of German traders in Italy was of course due, in no small degree, to the German thoroughness in mastering the Italian language. With the conclusion of peace, Italy will naturally look to her ally, the United States, rather than to Germany, for help. Here indeed is a wonderfully ripe field for American commercial genius.

There is another consideration which is perhaps more important than the commercial one. In the investigation of nearly every branch of the natural or social sciences, Italy will be found among the three or four leading nations. The American public is already familiar in a general way with the names of Marconi, the inventer of the wireless telegraph, and of Caproni, the inventor of the monster bombing biplanes. We have been informed that the Italians are among the foremost civil engineers. The Italian performance in building and maintaining roads in the Austro-Italian Alps, and in transporting supplies and ammunition across dizzy abysses, has been a source of constant wonder to us. We have also heard accounts of the great natural obstacles overcome by Italian tunnel diggers. We are doubtless more or less aware of the progress of Italians in medicine and bacteriology—of the experiments fathered by Grassi, which led to the control of malaria not only in Italy, but also in the Panama Canal zone. Names like those of Galileo, among astronomers, of Torricelli, Volta and Galvani, among physicists, of Christopher Columbus, among explorers and discoverers, are quite as familiar to the American ear as those of the painters, Giotto, Fra Angelico, Filippo Lippi, Botticelli, Leonardo da Vinci, Raphael, Correggio, and Titian; of sculptors like Michelangelo; of composers like Palestrina, Verdi, Rossini, Puccini, Mascagni, or of singers like Patti, Caruso, Galli-Curci, and a host of others.

In view of the unquestioned scientific prestige of Italy—of her acknowledged supremacy in certain important branches of science—it is very strange that American scholars have generally neglected the Italian language. It is the more regrettable because Italian shares with French and Spanish, the advantage of being comparatively easy to read, while it is undoubtedly one of the least difficult languages for Americans to pronounce. A year or two spent in acquiring this beautiful tongue will bring far more satisfactory results than many years devoted to the study of certain other modern foreign languages.

Let us now review in a general way the situation in certain important branches of learning in which American investigators have been crippled because of a lack of knowledge of Italian.

First should be mentioned mathematics. In mathematical physics, and especially in geometry, Italy leads the world. Look for a moment, if you will, at the galaxy of the names of her investigators in these lines:

Bologna—Enriques and Pincherle.
Naples—Marcolongo and Pascal
Padua—Levi-Cività, Ricci and Severi.
Pavia—Vivanti
Pisa—Bianchi and Dini
Rome—Castelnuovo and Volterra
Turin—Boggio, Segre and Somigliana

In Italy are published such important research journals as the *Annali di matematica,* the *Giornale di matematica,* the *Rendiconti del circolo matematico di Palermo,* the mathematical publications in the *Rendiconti* of the Lincei and of other learned societies.

After mathematics, let us consider chemistry. It is significant that Italy, which, like the United States, imported chemicals in vast quantities from Germany before the war, was able with wonderful quickness, to produce at home, on a vast scale, everything necessary for the prosecution of chemical warfare. This surprising fact may be better understood, if we glance for a moment at the past achievements of Italy in the field of chemistry. First to be mentioned is Avogadro, the discoverer of Avogadro's law, on which all present day molecular chemistry and physics are based. Then there is Cannizzaro, whose studies clarified the distinctions between atoms, molecules, and equivalents. Needless to observe, Italy has many modern representatives worthy of these illustrious pioneers. Suffice it to mention Cassuto, who has made notable advances in the study of colloids; Bottazzi, who is an investigator of physiological and biological chemistry; Giolitti, who has made significant contributions to our knowledge of the composition of steels; and Vanino, originator of the best work on organic and inorganic preparations, for laboratory use and for manufacturing.

In Italy are published such indispensable chemical journals as the *Gazzetta Chimica Italiana,* ranking with the *Journal* of the American Chemical Society, as well as the publications of the learned societies of the Lincei, and many others. These important publications have been for the most part, a closed book to American chemists, except in cases where German translations exist.

In the field of zoology and anatomy, the Italians stand very high indeed. The following is a partial list of Italian authorities along these lines:

Bologna—Carlo Emery
Padua—Favaro
Bologna—Ghigi and Giacomini
Pisa—Romiti
Pavia—Golgi
Cagliari—Sterzi
Florence—Chiarugi and Giglioli (just deceased)
Pisa—Ficalbi
Naples—Monticelli, Della Valle and Umberto

To this list should be added such names as those of Berlese, the leading authority in the whole world on insects, and Grassi, one of the foremost investigators of all time along many lines, particularly in bacteriology.

Only passing mention will be made here of many other lines of investigation for which a kuowledge of Italian is highly necessary, such as botany, physiology, and geology.

Let us now pass to the so-called social sciences, where the eminence of Italian scholars is well-known. It is sufficient to mention the names of the great criminologists and sociologists—Lombroso, Ferri and Baron Garofalo; of the historians Ferrero and Villari; of the distinguished authorities on political science and public law, such as Brunialti, Minghetti, Brusa, and Orlando; of the authorities on international law, such as Fiore, Carnazza-Amari who are worthy modern successors of Gentili, one of the founders of the science, who ranks almost with Grotius.

In Italian are published a large number of journals on criminal law and criminology, on international law, and in fact, on the whole field of social sciences.

If we now turn from practical to cultural considerations, we find the case for Italian even stronger, if anything. A beautiful language, practically every word ending in a vowel or a liquid, with no harsh consonant combinations, no outlandish vowel sounds, with a sonority and purity of tones which make it ideal for singing, it has been called with some justice "the logical universal language."

A knowledge of Italian enables the American tourist to travel and sojourn with pleasure in one of the most delightful countries in the world. As the author of one guide book rather enthusiastically expresses it: "All the time which is spent outside of Italy is time wasted." In Italy, the tourist really

kills two birds with one stone,. for he is privileged to see not only the many wonderful monuments of the Middle Ages, of the Renaissance, and of later times, but also the ruins of ancient Rome, of the Greek colonies in Southern Italy, and even Etruscan ruins, going back to the fifteenth century before Christ.

Italian literature is one of the very richest in the world. What a roll-call of names is there! Dante, Petrarch, Boccaccio, Ariosto, Tasso, Alfieri, Goldoni, Manzoni, Leopardi, Carducci! The greatness of Italian literature is evidenced by its tremendous influence on the literatures of other lands. Our own Chaucer was heavily indebted to Petrarch, and modeled his *Canterbury Tales* on the *Decameron* of Boccaccio. Shakespeare owed much of his best inspiration to the land of Romeo and Juliet. Milton steeped himself in the Italian poets, and made a journey to Italy, before seriously attempting to compose his *Paradise Lost.*

Of the three greatest names in German literature, two, Lessing and Goethe, are intimately connected with that of Italy. Indeed, it is well known that it was the *Italienische Reise*—the Italian journey—which was the crowning inspiration of the career of Goethe.

The question now arises: What should be the position of Italian in the high school curriculum? It is obvious that with French and Spanish vying with each other for the position lost by German, it will be difficult to make room for the teaching of Italian also. As a practical solution of the difficulty, I suggest that the study of elementary Italian be made introductory to the study of elementary Latin. Excellent pedagogical reasons could be urged in favor of this step. To begin with the study of Latin, rather than of Italian, or of the language of some other modern Romance country which has to a large extent inherited the cultural traditions of classical Rome, is illogical when the relative difficulty of the languages concerned is considered. The impossibility of making Latin palatable to most youngsters is notorious. The numerous *Gates to Cæsar,* and the like, which are found on the market, give evidence that our publishers, at least, recognize that the accepted method of learning Latin—first a year of grammar, then a year of the *Commentaries*—is preposterous.

Let it not be supposed that I am an enemy of the study of Latin. Quite the contrary. It is my belief that modern language instructors should make common cause with the devotees of the ancient languages to combat the ravages of an excessive materialism, which is all too prevalent in our educational circles. But at the same time, the best service which could be rendered to the dead language is to teach it after an acquaintance has been made with its living representatives. The connection between French and Latin is not altogether obvious to the untrained mind, while the average student of Spanish is actuated more by hopes of fabulous profits to be gained in South American trade than by any purely cultural ambition. On the other hand, the study of Italian should make an ideal appeal to the student with humanistic leanings who formerly started his high school course with Latin.

Italy, of all the Romance countries, has been the one which has most steadfastly preserved the classical tradition. Through the ages, her men of letters have been conscious that Italy was, as it were, the modern continuation of ancient Rome. In the Middle Ages, this consciousness existed to an extent which actually retarded to a considerable degree the development of a literature in the vernacular. Hence it is not surprising to find that Petrarch, who is today best known for his Italian sonnets, was in his own day chiefly famous for his discoveries of old Latin manuscripts, of Quintilian and of Cicero. Boccaccio, now celebrated as the author of the *Decameron,* ruined himself financially to pay for the unearthing of ancient classical manuscripts, as well as for importing into Italy Greek editions of the *Iliad* and of the *Odyssey.* In our own day, Pascoli is not only one of the leading Italian poets, but also a professor of Latin of no mean repute.

Because of this intimate connection between Italian literature and classical scholarship, as well as for purely linguistic reasons, such a book as the *Cuore* of De Amicis is the ideal first step towards the study of Cæsar.

The cause of humanism will gain in another way from an early approach to the study of Italian. We are, all of us, too familiar with the narrowness of many American men of science, who can see no value in studies of a purely cultural value, or often as not, in anything outside of their peculiar specialty. By bringing Americans in contact with Italian scientists and the like, we introduce them to an entirely different sort of atmosphere. In Italy there still continues the tradition of Galileo, who was not only a mathematician and astronomer of the highest order, but also an enthusiastic lecturer on the great poets Dante and Tasso; of Leonardo da Vinci, physicist, inventor, painter, and man of letters. The universal love of the Italians for music, art and literature, especially poetry, has been the remark of nearly every traveler in Italy. This connection between the humanities and the sciences in Italy is recently illustrated in the career of the poet and novelist D'Annunzio, who has been most inventive in his methods of bombing the Austrians from the air.

Perhaps an even more striking illustration of the breadth of culture which has become traditional among Italian men of letters was Giosuè Carducci, who combined the scientific temperament with the vision of the poet. He was not only the foremost poet of modern Italy, but also a critic and scholar of the very highest order.

To sum up: The study of Italian in our high schools should be encouraged because of the growing importance of our trade with Italy, one of our natural commercial fields. Italian is a valuable tool for the student of the sciences, whether the natural sciences, like mathematical physics, chemistry, zoology, bacteriology, botany, etc., or the social sciences, like history, sociology, criminology and political science. It is a beautiful language, the ideal medium for music and poetry. Its literature ranks with the best in the world, not only in intrinsic merit, but also because of its influence on most modern literatures. The logical time to begin its study is when the child is young, and can easily acquire a good accent. He will thus have an ideal introduction to the study of Latin, which offers excessive difficulties to the young student, and the accent of which is a matter of minor importance. The early study of Italian will be a gain for the cause of humanism, not only because such a procedure is the natural one pedagogically, but also because the student will thus be turned early to a civilization where the humanities are appreciated by all classes of society, by the materialistic scientist, as well as by the idealistic poet.

In the discussion that followed this paper, Professor Fitz-Gerald cited, as typical of the attitude of the Italians towards English, the example of the late Professor Carlo Leonardo Speranza and his son, Gino Speranza, both of New York, who for years conducted night school classes in which they taught English to recently arrived Italian immigrants so that they might the more speedily become Americanized.

Miss Schmidt reported on the questionnaire sent out concerning First Year German. This report is given below:

Questionnaire with Number of Replies

In order to get a more general and definite expression of opinion before the final formulation and adoption of the syllabus the following questionnaire is submitted to you by the executive committee. It has been made very brief in the hope that a wide response may be secured. A report on these replies will be made at the next conference. The committee will be glad to receive further suggestions for the work of the first year.

I. (a) Do you think that the development of reading ability should be the main aim in a three year high school course?

Yes—57
No—10

(b) If so, are you in favor of reducing work in grammar as much as possible and placing a correspondingly greater emphasis on the acquisition of vocabulary? (It is understood that a certain minimum of grammar—approximately that outlined in the syllabus—would have to be thoroughly done and considerable work in speaking and writing—oral and written composition—would also have to be required. This would in no way be in conflict with the main aim but rather an aid in its attainment.)

Yes—58
No— 5
No answer—4

II. (a) Are you in favor of using a separate reader or do you think that in the first year a combined grammar and reader should be used—a book in which reading, grammar and composition go hand in hand, the exercises based on the text serving to fix both the vocabulary and grammatical forms and principles of the reading lesson?

Separate reader.....19
Combined grammar and reader..32
No definite reply.....16

III. (a) There are those who think that dictation is not as important in the study of German as in the study of other foreign languages—e. g. French. The pupil trained according to the direct method has no difficulty in understanding the spoken work and the phonetic spelling of the language reduces misspelled words to a minimum. Would you, in view of these facts, make dictation a part of the minimum requirements in the first year work?

Yes—38
No—29

IV. (a) Do you think that the informational material suggested in the syllabus can be successfully given unless this material is contained in the textbook studied or is given in the form of assigned readings in reference books in English?

Yes—14
No—48
No answer or indefinite—5

(b) Do you think it should be included in the minimum requirements?

Yes—44
No—19
No answer—4

Please send your replies to Miss Blenda Olson, Macomb, Ill.

At this point in the session Professor Fitz-Gerald took the chair and asked for nominations for the new member of the Committee, vice Miss Schmidt, who was the outgoing member this year. Professor Oliver nominated Miss Schmidt and she was re-elected for the coming triennium.

The next part of the program was given by Professor Fitz-Gerald on "The Importance of Teaching Spanish in Our High Schools." He touched upon the commercial side of the question but put the emphasis upon the deep spiritual relationship that may be found be-

tween our country and South America. He gave two incidents to illustrate this point. The first was the reception of our fleet in Buenos Ayres and especially in Montevideo, where the Uruguayan War Department, and the Department of Public Works, together with private subscriptions from a volunteer committee of civilians met the expense of turning a large building over to the Y. M. C. A. as a moral safeguard for our boys. The second illustration was the large amounts of money the South American countries raised for the Y. M. C. A. work. Montevideo raised $100,000 in two weeks and Brazil raised $115,000 in 9 days. In Rio de Janeiro the campaign was brought to a close, on the day that Brazil declared war on Germany, and Brazil's eminent statesman Ruy Barbosa, in speaking at the Y. M. C. A. banquet, claimed that by these two acts Brazil had shown twice in the same day that she had found her soul.

Miss Josephine Doniat was to give the report of the Syllabus Committee on Second Year French. Because of the absence on war service of the other member of the Committee, Professor McKenzie, who had the papers under discussion, Miss Doniat presented some of the more important points which had been agreed upon by the majority of teachers.

Review of grammar material—more complete treatment of pronouns and verbs.

Verbs—Observation of formation and use of all tense forms with distinction between them. Study and practice in subjunctive and irregular verbs. Complete, elaborate and continue drill.

Much reading for Second Year French and easy reading. Practice in change of tense with book open. Make reading the center of drill, conversation and grammar.

Professor Fitz-Gerald explained the new classes in the University for S. A. T. C. students.

Miss Doniat questioned the right of calling one college year equal to two high school years, and gave an incident of one girl from her class who went over the same reading material here in the University that she had previously read in high school.

Professor Oliver sympathized with Miss Doniat in this matter and stated that he hoped this problem might be solved in some satisfactory manner to the student as well as the instructor.

Professor Fitz-Gerald expressed the hope that the time would come when pupils would be placed in classes according to their actual attainments in a given language, regardless of the amount of that language previously taken.

At this time announcements were made concerning the American Association of Teachers of Spanish with its quarterly journal *Hispania* ($2.00 per year) and Association of Modern Language Teachers of the Central West and South its official organ *The Modern Language Journal* ($1.50).

The last part of the morning's program was given by Miss Bertha des Combes Favard of Chicago, and proved to be most instructive and inspiring. She presented to her audience her method of teaching a French class one of the simplest lessons, containing the short phrases, "C'est la chaise. C'est la table. Ce m'est pas la chaise. Ce n'est pas la table." The pupil should have studied his "black and white lesson" the night before. He must understand that a French word or phrase is triplex; it has sound, meaning and content. The French language is one of syllables not of words. "Our aim is to impart the art of not being green in a foreign language." In her inimitable manner Miss Favard brought to her audience the exquisite rhythm and cadence of her language.

Dr. Van Horne inquired what book Miss Favard used in her classes. She replied that it was one that Mrs. Knowles and she edited together and was the only one she knew in which cadence was mentioned.

The meeting closed at 12 o'clock.

AMY L. BEACH, *Secretary.*

[This section met with the other language groups in joint session in the afternoon.]

13. MUSIC SECTION

Morning Session

The Music Section opened its sessions at nine a. m. with J. Lawrence Erb in the chair. After the announcements, the Chairman made a brief address of welcome in which he emphasized the keynote of this year's Conference, namely, that with the cessation of the war and the new problems of reconstruction, education must undergo important readjustments to fit itself to the large task before it, and that the primary consideration must be the needs of the students rather than the theories or hobbies of the teachers.

The program for the morning then proceeded, opening with the report of the Committee on the History of Music, L. L. Carl of Belleville, Chairman. In the absence of Mr. Carl, the report was read and is as follows:

Report of Committee on the History of Music

On account of the shortage of teachers during the war and the abundance of work caused by it, we could not spend as much time with our task of investigating conditions, as we should have done. Since everybody was overwhelmed with duties of all kinds, the committee should be excused, if it can not present at this meeting a complete report.

To letters, which were sent out to the principals of different high schools in regard to their method of teaching the History of Music, only two answers were received. They gave us not enough material to work on, though we appreciated the prompt response of Monticello and Paris very highly.

It is surprising to notice, that out of the great number of high schools in the State of Illinois, only a few institutions teach History of Music as an accredited subject. If the men who have charge of education, would take the trouble to investigate the educational value of this subject, I am sure that its introduction would be secured.

My own experience has taught me the importance of History of Music from an educational standpoint. I know that the students who take up this study are always much interested in it. It opens their eyes to a new field; they recognize in the development of music the intellectual progress of nations. It brings them into closer contact with conditions of former centuries and other nationalities and makes them appreciate matters of art and culture.

For these reasons it should be the task of this committee to work out two matters:

1. To propose a complete and practical curriculum for teaching the History of Music, and

2. To create a desire for making the History of Music a major study in the curriculum of the High Schools of the State.

If the members of the music section see fit to entrust this matter once more to the members of this committee, we shall endeavor to present next year a more complete plan.

L. L. Carl.

In the discussion of the report, the Section voted that, in its opinion, the study of the History of Music in the High School is best promoted by the use of a large number of musical illustrations, sequentially arranged, with just enough descriptive and strictly historical matter to afford the proper setting, and with outside work from textbook or otherwise to furnish the background. The feeling was that no amount of reading or discussion about music could give any intelligent idea of the history of the art, that only by hearing the works of the period under discussion was it possible to make the courses of any value, since otherwise a purely historical study could be best carried on in history classes. With these suggestions, the committee was asked to continue for another year with the idea of preparing suggestions as to curriculum.

The report of the committee on *Graded Materials for High School Chorus and Orchestra* was presented in the absence of the Chairman, Miss L. Louise Bear of Decatur, by Miss Renfrew of Monticello. It is here appended:

Report of Committee on Orchestra

Orchestra (Advanced)

Collections

The School and Community Orchestra—Book I and II.....(Willis Edition)
Advanced Album .....(Ascher Edition)
Perfection Album No. I
Perfection Album No. II.....(Feist Edition)
The Paramount Orchestra Folio.....(Ditson)
Progressive Orchestra (Album).....(Willis)
Standard March and Two Step Album.....(Carl Fischer)
Ten Light Overtures.....(Ditson)

Single Pieces

Minuet in G ..... Beethoven
Noctural Piece ..... Schumann
Moonlight Wanderings ..... Bennett
Largo ..... Handel
Carmen March ..... Bizet
A Twilight Romance (Cornet solo) ..... Bennett
Bohemian Girl Selections ..... Balfe
Pinafore (Selections from) ..... Sullivan
Martha ..... Flotow
Overture to Chimes of Normandy ..... Planquette
Serenade ..... Schubert
The Busy Bee ..... Bendix
War March from Athalie ..... Mendelssohn
Minuet from Military Symphony ..... Haydn
La Cinquantaine ..... Gabriel-Marie
Dancing Doll ..... Poldini
Blue Ribbon March ..... Bennett
The Swan ..... Saint Saens
Humoresque ..... Dvorak
Al Fresco, Intermezzo ..... Herbert

Orchestra (Beginners)

Collections

Beginners' Album ..... (Ascher)
The Community Orchestra ..... (Willis)
Amateur Concert Album in V Vol., arranged by Tobani, Iseman, Lilenberg ..... (Carl Fischer)

Single Pieces

Marches

Boys Brigade .....
Cadets' Drill .....
Return of the Volunteers .....
Yankee Boys .....
Snow Boy: Matinee .....

Waltzes

Woodland ..... Jenkins
Reign of Roses ..... Jenkins
Dawn of Beauty ..... Jenkins

Dances, Etc

Dance of the Honey Bee .....
Garden of Roses .....
Festival March ..... Mendelssohn
Barcarole from Tales of Hoffman ..... Tocaben
Silver Bells, Gavotte ..... Isenman
Fairy Tales (Mærchen) ..... Konzak
A Musical Dream ..... Isenman
Solemn March (from Joshua) ..... Handel

L. Louise Bear
Clara T. Dailey
Clara E. Renfrew

The *Orchestra Report* was received and spread on the minutes with the request that a supplementary report be presented next year.

In connection with Chorus Report, the Conference expressed itself as doubting the wisdom of including oratorio and opera choruses or arrangements of songs for chorus. The sentiment was that for High School students part-songs were much better adapted to the purpose. The question of the use of music by German composers was by common consent decided by the omission of compositions by living German composers or such as pay royalties and so far as possible the elimination of editions published by German houses. The Classics and compositions of the first two-thirds of the nineteenth century did not fall under the ban.

Miss Mary D. Phillips of the University then read the following paper on *Music, a Factor in Americanization.*

Music a Factor in Americanization

MARY D. PHILLIPS

"Americanization is a purpose; not only a program, but a matter of education." At no time have we been as much interested in what is American as now. There is nothing that gives us as much pride as the fact that we are Americans. Yet just what is in an American?

Is the American the lineal descendant of the early settlers? Is the American the Bostonian, that descendant of the Pilgrim Fathers, who wishes us to base our history on Plymouth Rock? It is a solid foundation but scarcely a broad one. Is the true American the New Yorker, the son of the old Knickerbocker families, who came to this continent with the double purpose of annexing a new colony to Holland and of gaining wealth from the Indians? Is the true American the loyal Philadelphian whose Quaker ancestors prayed for and piously cheated, their Indian neighbors? Is the true American the Virginian, that son of our oldest English colony, composed half of gallant Cavalier adventurers and half of indentured servants and deported criminals? Is the true American any of these?

Perhaps the typical American is not even a man of Anglo-Saxon blood. Perhaps he is of another race. Yet surely he is not the negro, downtrodden, only now emerging from centuries of slavery. Nor is the real American the Indian, survivor of an equally vanquished people. What of the immigrants of the nineteenth and twentieth centuries? They came here for the same purpose as our early colonists, religious and political freedom and commercial pursuits. Is the true American descended from Germans, Scandinavians, Russians, Jews, Italians, Scotchmen? Which of these is American?

The true American is none of these and yet all of these. He is the man in whose veins flows the blood of many nations and in whose mind is found the influence of all races. Amalgamation will be Americanization. We have in America thirty or more races, perhaps ten or twelve of which are of sufficient strength to have become definitely associated with our American soil. All of these races are making a definite contribution to Americanism. If we should have eliminated all immigration since 1900, what kind of an army would we have had? Men who have fought for us, regardless of nationality, are coming back to us with a deep love for America. No matter where they or their fathers were born, no matter what their color or creed, we must recognize and laud the races that produced them for us.

The amalgamation that has given us the American man and woman will give us the American civilization, the American art, the American music. Our music, like our people, has come from many races.

In New England up to the eighteenth century there was no musical life, not even the most elementary, for at the end of the seventeenth century the

good Puritans did not know more than five psalm-tunes. For the first hundred years America was largely under the influence of Massachusetts, and the most elaborate musical document was the Bay Psalm Book, containing metrical versions of the psalms, arranged to be sung to certain old tunes found in the Ainsworth Collection, brought from Holland. In spite of the fact that other musical countries found their starting point in the church, we cannot say that these psalm-tunes furnished any basis for our musical development. There is no discernible trace of the influence of this psalmnody in our popular or more serious compositions.

Music fared better in Virginia. The colonists of Roanoke and Jamestown came from musical England at a time when every Englishman played his instrument. These Virginians sang and played the old tunes which they brought from home, and some of the gifted ones may have composed music of their own. English music probably remained unchanged in Virginia, Maryland and the Carolinas, but we are sure that it was altered greatly where the pioneers carried it to Kentucky, Missouri and West to Texas. Today there is a wealth of song to be found in the recesses of the Blue Ridge Mountains. English music modified to suit a sturdy pioneer people. In this music we find that rhythm is the strong element, and that practically all of their songs have their principal use in connection with the dance. Unmistakably English in origin are the characteristic tunes, tunes that we find in the southwest, unmistakably English but with a local color all their own.

The French in Louisiana and Canada and the Spaniard in California, left their trace unmistakably in the architecture, art and music of these localities. Yet only in isolated spots, where the races are especially strong in tradition, have they survived. We still find French music in Quebec and New Orleans and Spanish music in Mexico and Southern California.

Many American musicians are turning hopeful eyes to Negro music which is after all English music strained through the African temperament. The Negroes form the only caste in America that resembles the peasants of Europe, from whom the loveliest melodies have sprung. The Negro copied the white man and danced and sang like him. In the slave markets song was his greatest relief when forced to sever family ties. Booker T. Washington has said, "The plantation songs, known as the Spirituals, are the spontaneous outburst of intense religious fervor, and had their origin chiefly in the camp meeting, the revival and in other religious exercises. They breathe a childlike faith in a personal Father and glow with the hope that the children of bondage will ultimately pass out of the wilderness of slavery into the land of freedom. There is in these songs a pathos and a beauty that appeals to a wide range of tastes, and their improvised native harmony makes abiding an impression upon persons of the highest musical culture."

While some musicians are arguing that the foundation of our national music is in the songs of the American Negro, others believe that the future of our American school rests in the use of Indian melodies. As all music developed from primitive man, so the Indian chants and dances are of exceedingly great importance in the building of an American school of music. Indian material has been used by our composers to lend a savage color to their music. MacDowell uses the characteristics of Indian music in his "Indian Suite" just as Saint-Saens uses oriental color. All Indian songs have legendary stories. All Indian tonality is distinctive, and therefore it is almost impossible to translate it into our regular scale. The rhythm is strongly accented; a popular rhythm with the American Indian is the 5/4 which was also a favorite with the Ancient Greeks.

Our recent immigrants have brought us music. Much as we might like to eliminate all German influences, we must remember the German immigration that came in the forties and gave us such men as Carl Schurz. The Germans made such cities as St. Louis, Cincinnati, and Milwaukee the homes of great numbers of music loving people. It is possible that they formed the greatest

educational influence in music that the country has yet received. It is said that wherever two Germans settled in America, they organized themselves into Sængerbunds.

Then there are the Welch who have settled in America and brought their music with them. Many of our best choral concerts are given by Welch choirs. The Moravian settlement at Bethlehem, Pennsylvania, has given us the Bach Choir. The American Bohemians, whose National Alliance gave to the Allies 170,000 fighting men, furnished the inspiration for parts of Dvorak's "New World Symphony." Then there are our later immigrants, musical Italians and art loving Russians.

When we consider the musical traditions of the wanderers from Europe, it seems absurd to hold up to them as our sole musical heritage the melodies of two races that we have conquered and held in bondage. These new Americans have the musical gift. Why do we not make it a part of our own? This continued immigration from all lands has brought forth a population too diverse to accept the musical tradition of any one nation. We must amalgamate, to obtain music that shall be truly American.

We know that Folk-music in other lands has developed during days of hardship. Perhaps the war will furnish us our needed impetus. We are too near our own music to judge its true worth rightly, but there are many of the war songs and ballads of 1861 which will undoubtedly be classed as American folk-song in future days. At times of national stress, where feeling runs high, there are naturally created such songs as "The Star Spangled Banner," "Marching Through Georgia," "Tenting Tonight," "Tramp, Tramp, Tramp," and "Rally Round the Flag." Fitted to rank with the best legendary folk-songs of any land are "Old Folks at Home," and "My Old Kentucky Home," by Stephen C. Foster, growing naturally out of the stress of slavery times. No American ever touched the sympathetic chord in all hearts with the sadness of Negro slaves as did Foster in these two songs. In their permanent appeal to the hearts of our people, they are truly folk-songs. Will our present time of stress produce music? And what will this music be? The whole world is to be reconstructed. American civilization will share in the great upward movement. American art and American music will go through a period of reconstruction.

What can we as Supervisors do in this great reconstruction period? There are two big opportunities for us through the Public School and the Community Sing.

We have in our public schools children of many nations. Let us recognize that some of the greatest of the world's music comes from those nations. Let us assimilate this music and teach it. Why is it we are not a nation of linguists? Our ears are not properly trained. How are we going to train our ears if not through music? If we are to teach our pupils music, shall we teach them music that is entirely new to them or shall we build upon that which they already know? I should say the most pedagogical way would be the latter. It has been said, "Had a European system of musical education been enforced on very young America when we were necessarily occupied with material problems, we might now be a nation of musical mugwumps, a mugwump being defined as a man educated beyond his ability." Had that been the case we might now be self-satisfied and incapable of original achievement. Let us not make mugwumps of our students.

Our second great opportunity is through the Community "Sing." Community music coming with its patriotic appeal has accomplished a big thing within a few years. It has aroused the emotions and kept the mental equilibrium of our people. What is to be the future of this great movement? Community activities have been wonderfully organized. Now we must use this organization and lead the Community Sing from a purely emotional occasion to an opportunity for the fine appreciation of music. We must organize bands, orchestras, choral

societies. We must make good music popular and overcome the prejudice deep in the public mind that music is an extravagance instead of a necessity.

The teacher of the History of Music and Musical Appreciation can make the work wonderfully interesting at this time. Think how all of us, young and old alike, have followed the great battle line. Every child knows Arras and the battle fought there. Will that child not be interested in the story of Arras and its history? Will he not be interested in knowing that the old town of Arras was once the home of the famous Adam de la Halle, and the center of the musical activity of the 13th century, and will he not be glad to hear the Troubadour music that centered around Arras of old? The beautiful folk-songs of Italy will gain a new interest, for they are the songs that are being sung in the towns along the battle front. What child could lack interest in a song sung in a town where his big brother fought, a song that perhaps that very big brother had heard in far-off Italy? In the letters from the boys we hear of the wonderful impressions made by the French and Italian bands. To the eager child at home, the Marseillaise, the Royal March and the Garibaldi Hymn will have a new meaning.

Many are the tales we hear of the influence of music on the boys "Over There." A returned Y. M. C. A. Secretary tells us that he returned one night after a German raid to find the "Y" hut blown to pieces. Nothing remained intact but the piano tilted at an angle of ninety degrees. Around it were a number of American boys, wounded by German shells. Beneath the piano lay a British "Tommy" playing, and the boys were singing "Pack Up Your Troubles in Your Old Kit Bag and Smile, Smile, Smile."

Last week John Kendrick Banks told us of a Paris subway during an air raid. The place was crowded with civilians and soldiers. Suddenly a young violinist who had sought safety there, drew out his instrument to amuse the waiting throngs. The soldiers drew around him while he played Debussy, Saint-Saens and our own McDowell until finally he broke forth into the latest French dance. You may be sure the American soldiers there joined the dancing throng, that thus expressed its contempt for German shells.

A number of our boys have written their own songs in the trenches, and recent cartoons show us what an important part the piano has played in modern warfare. Our boys have gained new ideas of art, architecture and music. They have heard the wonderful melodies of Italy, Belgium, France, England, and Russia. On their return they will impress their younger brothers and sisters with what they have seen and heard. Will these younger boys and girls be prepared to understand? A reconstruction period is coming; we must pave the way.

Our soldiers will have heard the great music of Europe. What music will they hear for the rest of their lives in America? What will our future music be? One thing we know. It will be dignified. All teachers of music have had to contend with the so-called popular music, or music that has been vulgarized by our vaudeville shows. The light-hearted darky songs with their picturesqueness and the use of syncopated rhythms has given us the coon-song and Jazz-band. Indian songs, Indian in name only, flooded our music stores. We have had "garbled oriental ragtime" and the refrain from "The Streets of Cairo" has been the leit-motif of a thousand and one pieces. Spanish melodies and Latin-American dances, the tango and maxixe have been exaggerated and vulgarized. The Hawaiian scale has been used, and the wierd harmonies and slurring effects have been abused with the much-over-worked ukelele. If we borrow from foreign sources, we must learn to treat these sources with respect and the deference due them.

Our future music must, moreover, be less extravagant than it has been in the past. We have demanded extremes. Instead of basing our American school of today on the modern finished products we must go back to the simple truths. Dvorak has shown us in his "New World Symphony," what can be done. He uses characteristics of national melodies, giving his impression of

the new world and showing his sympathy for the immigrant. In his "Largo" from the "New World Symphony," he expresses the loneliness of the Bohemians in the little prairie town of Spillville, Iowa, where every summer he used to play their organ for them. The loneliness of the immigrant has given birth to many other pieces of music, as "Gamale Norje," a Norwegian folk-song, said to have originated in Halsted St., Chicago. This description of the lonely exile as he longs for his native land is now sung in Norway as a folk-song.

Our boys are coming back to us with a love and respect for music not only as an amusement and recreation, but as an art. Will the small boy of the future continue to regard music as "an indoor sport for ladies only," when he has heard what his father tells of how music helped to win the war? After every war some nation arises supreme in politics, commerce and art. This opportunity now comes to America. Are we ready to make the most of it? Let us show the world that a singing nation is a winning nation in Peace as well as War.

The morning session closed with the presentation of the report of the Committee on *Musical Appreciation,* Miss Mabelle Glenn of Bloomington, Chairman. Miss Glenn presented her report as appended. This was supplemented by a short report by Miss Mary Phillips which also appears in this connection.

Report of Committee on "Musical Appreciation"

Miss Mabelle Glenn, Bloomington

A questionnaire was sent out last spring, but met with a meager response. This fall, another was sent out to the High Schools in the northern part of the State. I shall mention only the cities which answered that "Musical Appreciation" is taught in the High School. In very many cases, the Supervisor answered that she is very anxious to get such a course started, but for lack of time or lack of interest shown by the High School management, it has been impossible. Many who answered said they were able to teach musical appreciation only indirectly in the chorus period, in Glee Clubs and Orchestra. I shall quote directly or indirectly from some of the answers to our questionnaire:

Peoria

Part of chorus period once a week. Work given with Victrola. No credit.

Decatur

Work based on "Musical Appreciation," by Mason & Surette, and Faulkner's "What We Hear in Music."

Lincoln

We are expected to cover in Harmony, an amount of work equal to that in Tapper's "First Year Harmony"; in History, the work is based on Cooke's "History of Music," with much reference reading, and note-books, which are examined every month. The work in Appreciation, with the Victrola, includes the tone qualities of men's and women's voices, the instruments of the orchestra, something of musical form, and many records and piano selections illustrating the History and Harmony lessons.

Blue Island

We have no Musical Appreciation in our High School at the present time. However, I endeavor to give them as much of that work as possible along with their other musical subjects. We have an orchestra, assembly singing, a class in Musical History, and a glee club. I find it possible, living so

close to Chicago, to encourage the students to attend the opera and orchestra, and take particular pains to escort a class to these attractions two or three times during the year.

Hyde Park

Musical Appreciation is taught to a limited extent in the Hyde Park High School. As we have no Victrola or pianola, we are necessarily limited in facilities. Nevertheless, we teach the subject to a considerable extent, making use of our best pianists and making a study of our best choruses as to mode, key, modulation, structure as to periods, cadences, etc.

La Grange

The period is called "Music Class," but I spend most of the time during the first semester in teaching an appreciation of singing, in particular. Vocal instruction is given by means of relating "vitalized speech." I plan a concert by artists and victrola. I shall prepare my pupils on the principal themes of violin solos, symphonies, and other forms. The themes will be sung, whistled and hummed.

The program will consist partly of the following:

Bach—"Air for the G String."
Handel—"Largo"
Schubert—"Serenade"
Schumann—"Traumerei"
Rubinstein—"Kammenoi Ostrow"
Beethoven—"5th Symphony."
Schubert—"Unfinished Symphony"

One of the most interesting letters on this subject which came to me was written by Miss Phillips, then in Harrisburg Township High School. I have asked her to report on the work done in that High School last year. I have also asked Miss Gardner to report for Springfield, and Mr. McConathy has promised to tell us what he is planning for the future of the Evanston High School, in Musical Appreciation. There is no need of my speaking of our course in Bloomington. It was outlined in the Proceedings of last year's Conference. We have changed our textbook, however. "A Standard History of Music," for students of all ages, by James Francis Cooke, which we now use, is within the student's understanding. While the teacher must bring much into the class by way of outside reading, the book not being complete, yet we feel that this is much better than to have a book in the hands of the pupils that is far beyond them.

I found that our appreciation course was attracting only the pupils who expected to study music extensively. We were reaching only a small per cent of our 800. So we have another scheme for this year. We have two 40-minute assembly periods per week. Hitherto, we have spent all of the time in chorus singing. Now we are spending a part of each assembly period in "Musical Appreciation."

To furnish an incentive for listening, our talking-machine dealers have given me $40.00 to be used in prizes at a listening contest, which will end the work of this semester.

I have chosen 60 selections to be studied in assembly. At our contest, 10 of the 60 selections will be played. All of the pupils may enter the contest, they being asked simply to name the selection, name the composer, and write a five-line sketch about the selection. It is a much greater task to make musical appreciation interesting to a class of 800 than to a class of twenty. The records must be chosen with the idea of holding the interest of that number of students, as well as to their worth in the high school pupil's education. Our course consists of folk-songs, folk-tunes worked out into art forms, ballads, art songs of Schubert, Schumann, Brahms, etc., art songs of American composers, selections from operas, and from oratorios. Instrumental form is studied through the

classical period and the romantic period. Local artists are invited into the high school to give their rendition of these selections, so that pupils get to hear the different selections several times. Our talking-machine dealers keep all records in stock, and pupils are welcome to go to the stores and hear these records at any time. Although no credit is given for this work, yet because it reaches so many homes, and is functioning in so many lives, we feel that it is accomplishing even more than our Musical Appreciation course, which receives full credit, but reaches such a small group.

The discussion of this report was one of the most animated of the session and brought out the following points:

(a) That music is a language but an unfamiliar one, therefore its vocabulary and literature must be acquired by systematic and intelligent study.

(b) There is a question whether the term "Musical Appreciation" as applied to a separate course or the separate course itself is not a mistake. Properly speaking, it would seem as though Musical Appreciation or "Intelligent Listening," should be a part of every musical course and that perhaps better results would be attained if the course were not made a separate thing but its elements distributed, at least to a large extent, throughout the history of Music Course and others of similar type. In such a case, there would still be room for a certain amount of work in Form and Analysis, Instrumentation and the like.

(c) Any really adequate curriculum of music in the schools must make provision for the three important elements, *Listening, Structure or Theory, Music Making.* These elements might well be represented respectively by *History* or *Appreciation, Harmony, Applied Music (Chorus and Orchestra),* and the credit should be divided upon practically an equal basis if these courses are intelligently arranged.

Report of Musical Appreciation Work

Miss Mary Phillips

There is need for different grades of work designated as Musical Appreciation. The aim in any grade of work in Musical Appreciation is to afford increased enjoyment and wider understanding of music. This must come through an intimate acquaintance with the greatest compositions in musical literature. The intrinsic musical worth of the compositions should be considered, also they should illustrate the point to which the pupil's attention is to be directed.

I have a few suggestions for different viewpoints of Music Appreciation. Considering the historical viewpoint, a note-book should be kept with the correlation of musical development to contemporary historical events and literary epochs.

We look to the ancient Jew who has kept his music with great care in the collection of the Orthodox Cantors. We are able to have the Music of Cantor Sirota of Warsaw with chorus. The combination of Hebrew and Greek chanting resulted in the Antiphonal chanting in the early Christian church. In Greek music we have the Hymn to Apollo in the famous 5/4 rhythm as well as other interesting chants. A famous early hymn of the Christian church is the "Hymn to St. John the Baptist." It is from this that Guido of Arezzo

established the syllables for the scale. This same record gives us the "Lament for Charlemagne." The great master of the Holy Roman Empire realized the importance of music as an influence on civilization. This period is almost identical with that in which the Anglo-Saxon poetry flourished. (Beowulf.)

In secular music we have the influence of the Crusades apparent in the music of the Troubadours, who brought back to Europe the most beautiful melodies of the Orient. This was not alone confined to France but manifested in contests of Minnesingers. Most interesting is the music of DeCoucy and Thibaut of Navarre. "Sumer is icumen in" gives proof that a school of music existed early in England. The time of Chaucer is brought directly to us and the same old English as in "Canterbury Tales."

As the Netherlands ranked as the most important country commercially during the fifteenth and sixteenth centuries, it is natural that the greatest school of art and music should have been developed there. The music of Arcadelt, composer of Madrigals, Orlando di Lassus, Palestrina, and of the Germans, Prætorius and Calvinus should be heard. Gothic architecture and the Netherland School of Painting could be correlated with this period. The music suggested here could all be obtained in records or can be found in different music histories.

Another viewpoint is the Folk-song, this being the great cornerstone on which all our secular music rests. To be developed are the important principles of Music-Form, Nationality, Poetic Thought. Folk-song is the simplest and first musical pattern. The many different folk-dances developed into the different instrumental forms during the classical period and later into Sonata and Symphony form. After listening for the formal pattern, never leave it, without hearing the work in its entirety. Any great art work, be it literature, art or music, can be ruined by being dissected and not being reconstructed. This is particularly true of music.

Suggestions for Material:

Folk Songs of Many Nations—Elson
Songs of Mexico and South America—E. Hague
Songs of the Appalachians—Cecil Sharpe
Songs of People of Canada and Brittany—Julien Tiersot.

Material for Library:

Young People's Story of Music—Whitcomb
How to Listen to Music—Kubiehl
Trouveres and Troubadours—Pierre Aubry
History of American Music—Elson
The Song—Upton
A Guide to Music—Mason
Orchestral Instruments and What They Do—Mason.

Afternoon Session

The afternoon session opened with the annual business meeting at which Miss Mabelle Glenn of Bloomington, and Miss Edna King of Joliet, were elected to the Executive Committee of the section for the three-year term and Mrs. Homer E. Cotton of Kenilworth, was elected to fill the remainder of her deceased husband's term. The present officers, Chairman J. Lawrence Erb, University of Illinois, and Secretary Mrs. Elizabeth McNair of Mattoon, were re-elected for the ensuing year.

As a result of the morning's discussions, the section voted to recommend to the Senate of the University of Illinois that it take up

for consideration in the near future the acceptance of applied music for entrance credit to the University. The section is already considering the matter of prerequisites and curricula for high school courses in applied music and hopes to be ready to report considerably in detail at the next conference. It is suggested that the Senate set its machinery in motion so that it may be ready to meet the high schools half way in this important matter.

The following Committees were appointed by the Chairman for the year 1918-19:

History of Music
L. L. Carl, Belleville, Chairman.
Mrs. Blanche E. Haughey, Maywood.
Miss Mabel Warinner, Harrisburg.

Musical Appreciation
Miss Mabelle Glenn, Bloomington, Chairman.
Mrs. Homer E. Cotton, Kenilworth.
Miss Clara T. Dailey, Peoria.

Chorus and Orchestra
Miss L. Louise Bear, Decatur, Chairman.
Miss Clare C. Renfrew, Monticello.
Miss Maude B. Wallace, Normal.

Prerequisites for Applied Music
Miss Mary D. Phillips, University, Chairman.
Miss Nettie C. Doud, Springfield.
Miss Mary J. Maguire, Alton.

The program proceeded with short reports from all of the supervisors present stating the music courses given in their respective high schools and the credit which these courses receive. A few of these from smaller towns are appended.

Bement—Mrs. Anna Grace Parmalee, Supervisor.

			Year
Assembly Singing	3 times a week	15 min. period	no credit
Girls' Glee Club	2 times a week	45 min. period	½ credit
Orchestra	2 times a week	45 min. period	½ credit
Harmony	5 times a week	45 min. period	1 credit

The Harmony credit is the only one which counts toward graduation.

Lincoln—Miss Grace Van Dyke More, Supervisor.

Music credits (all elective).
Music Appreciation (including some harmony, history and much listening to music) ..... 2 credits
Girls' Glee Club—2 hours per week ..... ½ credit
Orchestra—two hours per week ..... ½ credit

Applied Music—Piano, voice or orchestral instrument upon examination by Lincoln College Music Dept.. 2 credits
Music Appreciation required of students taking Applied Music credits.

(32 credits required for graduation.)

Monticello—Miss Clara C. Renfrew, Supervisor.
Composite Course, Class IV, 5 hours..... 1 credit
Orchestra, 1 hour per week .....¼ credit
Piano (Applied Music) .....¼ credit

Onarga—Miss Blanche Thompson, Supervisor.
Chorus (elective) 2 periods a week.....¼ credit
Assembly Singing, 20 minutes every day.....no credit

Westville—Miss Mae Custer, Supervisor.
Harmony, Musical Appreciation and History, 5 periods weekly ..... 2 credits
Girls' Glee Club .....no credit
Assembly .....no credit
Violin Class, 1 hour per week.....no credit

The Committee on Prerequisites for credit courses in the high schools (Miss Mary D. Phillips, Chairman) made the appended report. This report was discussed at great length, but, since the entire matter is as yet to a large extent in the experimental stage, the committee was continued with instructions to gather further data and bring in concrete suggestions and model curricula.

The Committee on Prerequisites has the following Schools reported as giving credit for Applied Music:

Springfield
Peoria
Rock Island
Oak Park
Bloomington
Danville
Decatur
East St. Louis
Evanston Township

There have been reports from most of these schools.

The Committee finds that instruction in no branch of Applied Music has as yet been sufficiently standardized to require every teacher to follow the same plan of work.

The Committee therefore would recommend that pupils doing work of a character acceptable to the authorities of the local school system, under a well organized plan of instruction, should be given credit.

The remainder of the session was devoted to free discussion of the following topics:

(a) The Supervisors' part in Public School Music.
(b) Is Music in the schools meeting the demands of communities and educators?

The discussion of the first topic brought out the fact that the attitude of supervisors varies greatly, many being extremely cautious with regard to their participation in community activities; but the trend of the discussion was strongly in the direction of urging supervisors not only to take an active part in community music where it is already organized, but, so far as is expedient, to initiate community music activities. The conspicuous success of certain supervisors in their respective communities was cited in support of this recommendation. It was felt, however, that in many cases the best results are obtained where the actual conducting of community singing is left to some individual who is peculiarly adapted to that sort of work, and where the supervisor does not feel it wise to undertake this phase of the activity, it is still possible to cooperate most efficiently in other directions. It was felt that the development of the musical life of the community is rightfully one of the most important parts of a supervisor's work and that the only excuse for the supervisor who does not reach out beyond the school room is that in too many cases she is already overloaded.

The feeling with regard to the success to which music is meeting the demands of communities and educators was that, while much may be laid to the lack of sufficient preparation on the part of many supervisors, yet, the greatest difficulty in most cases is a lack of appreciation on the part of the school board or school authorities of the part which music may and should play in education. The lack of sufficient time for the work is one of the greatest handicaps; while the misunderstanding on the part of superintendents and principals with regard to the function of music is another. Too often the supervisor is limited to the exhibition phases of music rather than to coordination of these with the educational work. Necessarily, under such circumstances, the results cannot be in any true sense constructive. Much was made of the lack of genuine educational sense in the planning and presentation of music courses and in the type of training which the supervisor receives, emphasizing performance rather than teaching and applied music rather than the theoretical and educational work which must necessarily be presented in the schools. The section was frank in stating as its opinion that music teaching in the schools is not yet, except in a very few cases, satisfactory, either educationally or from the community standpoint; but, on the other hand, the tremendous strides in the right direction within the past decade and the earnest enthusiasm and sincerity of purpose of all the better music teachers in the schools, hold out ample encouragement that the problems will be solved satisfactorily in the shortest time in keeping with their proper solution.

The session adjourned at five o'clock.

Professor Osbourne J. McConathy of Northwestern University School of Music then read his paper on *Assembly Singing* as follows:

The Proper Place and Method and Type of Assembly Singing To What Extent Should It Approximate Community Singing; How Far Should Popular War Songs Enter?

The topic as assigned to me by our chairman does not indicate clearly whether in his mind he had separated the exercises of assembly singing and the chorus period in the high school. It seems to me that quite a clearly marked difference may be made between these two gatherings. In many high schools, though, the only occasion for chorus practice is during the period which would better come under the term assembly singing. On the other hand, there are many high schools which have chorus periods but where the pupils seldom gather for general assembly, and when general assembly is held, singing is not always a part of the exercises. Where the school meets for singing in a body, not infrequently the school principal or others will take considerable time from the period for making announcements or for other matters which do not properly belong to a singing hour.

On the whole it seems to me better to draw a well marked distinction between assembly singing and the chorus period. The object of the chorus period should not be merely the efficient conquering of one song after another with no thought for comparative music merit. Correct use of the voice and intelligent phrasing and interpretation of music should be the rule. Further, if the pupils are not yet proficient in sight singing and thoroughly well informed in elementary theory, these should be taught in connection with chorus work. If, however, high school standards which imply such abilities have been reached, the incidental study should consist of musical appreciation. Structural features of the songs should be pointed out and some knowledge of musical form should be gained. Motivation, the phrase, sequences should be studied. Some knowledge of the composers should be acquired, and the use of selections from operas, oratorios, or cantatas should be made the occasion for study of these forms. Every effort should be made to broaden the musical horizon of the student through the medium of his interest and participation in chorus work.

With such standards in view the question as to whether or not the chorus period should be made required or elective becomes an important issue. The answer to the question must be based largely upon local conditions. Where the music study in the grades has been thorough and where the tradition has been established in the high school that chorus singing for everyone is a desirable and worthy exercise, required attendance upon the chorus period should be the rule. On the other hand, where the work in the grades has been below standard and where a number of pupils in the high school show little or no interest in music, it may be well to have a few years of encouraged music election.

The chief drawback in the elective chorus plan is that under this plan a certain number of students have no contact with music during their high school life. This I think is not well. Therefore I would suggest that in schools which have an elective chorus period there should be held a weekly assembly of not less than fifteen minutes, where all the pupils would be expected to sing at least a few patriotic and community selections, and where by means of the talking machine, or performances by invited artists or students of the high school, a certain amount of listening could be developed.

In schools where the music interest is slight, and the singing ability weak, much stress may well be laid upon what we know as "Music Appreciation." By this I mean that every effort should be made to train the pupils in the capacity to enjoy listening to music. Properly directed singing and careful and well organized selection of choruses for study are, of course, as essential a part of this plan as is listening to music performances or to the talking-machine.

The function of the glee club in the high school has an important bearing on the chorus period. Where the chorus singing is not of a superior grade, or where chorus singing is required of all pupils, it is desirable that the glee clubs should be rather large and that through them the pupils may study a type of music not practicable for study in the chorus period. Where the chorus work is of a superior quality, either because of the fine preparation in the grades and the good instruction in the high school, or because of the limited number of people in the chorus through the plan of chorus election, it would seem well to me to have the glee clubs smaller in number and to insist upon the very most exacting practice in choral performance.

From the foregoing statements the following conclusions might be reached: Where the music interest is great, required attendance on the chorus period would be preferable. Where the music interest is slight it may be wiser to have elective chorus, but to require attendance upon a weekly musical assembly. Furthermore, where the interest is slight, and the singing ability weak, greater proportionate time should be spent upon the development of musical appreciation and less upon an effort at securing excellence in choral performance. Finally, where the chorus singing is weak the glee club membership should be large, and where the chorus singing is good, membership in the glee club should be restricted and a superior type of performance required.

In choosing material for chorus singing it should not be forgotten that, although music may ally itself with sentiments of religion, patriotism, love of home, and so forth, and although it should never ally itself with less worthy associations, it is not to be valued because of such alliance. Music is essentially tone and tonal discourse and is beautiful as music in proportion to the beauty of tone, the beauty of tonal procedure, and the beauty and nobility of mood out of which it sprang. Music, in short, need express musical thought only. Until this is admitted understanding of musical beauty as a thing in itself cannot be undertaken. Certain old melodies saved from extinction in the first instance by alliance with a text of value, and at present by tradition and many hallowed associations, should be preserved so long as their appeal remains and while their use is not wholly perfunctory.

While chorus singing naturally must be the most general and the basic music activity in a public school system, wise administration in this work is more necessary than in any other branch of music study in order to obtain breadth of musical interest and understanding on the part of the students. It is possible for a pupil to sing during his entire high school term the sort of songs that are sometimes sung, study them in the manner in which they are sometimes studied, and come forth at the end of the course as remote from understanding and enjoyment of a Beethoven symphony or sonata as if he had had no such practice. Not only does the comparative emphasis usually given the subject and text of songs divert attention from purely musical values, but the physical exhilaration of singing may readily be mistaken for enjoyment of music. Further, the songs may be selected because of their appropriateness to certain occasions, such as class days, field days, arbor days, patriotic festivals, etc., and in such case musical merit usually has to be sacrificed or subordinated.

Permit me again to emphasize my belief that the chorus class is primarily for the development of a higher understanding and appreciation of music, and that the chorus music should be the chief material for the development of this appreciation. The chorus class is the occasion for bringing the large student body into contact with musical literature, and the instructor, in his desire for excellence of performance, should never lose sight of the main object of the course.

During the last year and one-half practically every activity in our country has been colored and influenced by the war. Music has been as deeply affected as almost any other general activity. This has been particularly true because of the attitude toward music shown by our national administration. Music

has been given a place of the utmost importance in the war work of our army and navy. Uncle Sam has become the greatest singing teacher in the world and all of our boys have been taught to sing both on the march and in their hours of recreation. The army and navy bands have been reorganized on a larger basis than was dreamed of before the war. Naturally these army musical activities have strongly influenced civilian life. Our high school children feel this influence and many high school teachers have considered it advisable to utilize the pupils' interest in camp music to stimulate singing in the schools. In my opinion it is well to do this, but I believe that great care and most deliberate judgment should be exercised in the selection of war song material and in the presentation of it in the high school.

There are few more sensitive beings than the average high school boy. He is peculiarly sensitive toward those in authority over him, his parents and his teachers. While the high school boy may be extremely careless in many of his personal affairs; while he may do innumerable things which by no stretch of the imagination would be called wise or well, he nevertheless wishes the people who have some control of his doings to be people that he can admire and respect. Few things can so embarrass a high school boy as an undignified or improper action on the part of his father or mother. Likewise he wishes to feel a respectful pride in the teachers of his school. He may take joy in considering his school teachers "good fellows," but there is a line beyond which the high school teacher cannot safely go and retain the respect of the students.

We who are teaching music need peculiarly to hold our pupils' respect, because it is our desire that the young people should look to music as a thing of beauty and as an expression of their highest ideals. It seems to me, therefore, that it is highly important that the music teacher should draw a line between camp songs and popular songs which may well be taught in the high school, and camp and popular songs which should find no place in the organized life of the high school. Many of the latter type of songs will be known to the boys and girls and sung by them on the street and in their homes. That is a matter which we cannot control and I am not sure that it is altogether desirable that we should wish or attempt to control it. But the camp songs which are taught by the music teacher in school time, while full of life, virility, and sentiment, should carefully exclude vulgarism and profanity, or other references not compatible with the refinement which we would like our pupils to associate with the organized school music work. Just where this line ought to be drawn is a matter worthy of considerable discussion. For instance, if I were to name some of the songs which I have taught in my high school it might seem to some of you as too severe a discrimination, while to others it might seem that I was using material below the standard which my previous statements would suggest.

Perhaps I can best open a discussion on this point by giving my own practice in the matter. I have taught my students "Good Morning, Mr. Zip" (substituting, however, the words "If the army don't get you the navy must" for "If the Camels don't get you the Fatimas must"), "K-K-Katie," "Over There," "Smile, Smile, Smile," "It's a Long Way to Berlin," etc. I have excluded from our use "Where Do We Go from Here," "Hang the Kaiser on the Sour Apple Tree," "Little Brown Jug," "We'll Knock the Heligo into Heligo out of Heligoland," "Hail, Hail the Gang's all Here," and many others that obviously are of a worse type than these.

Summing up my opinion regarding the use of war material, I would say that there is a splendid and legitimate place for the best of army and navy songs in our schools, but that it is the duty of the teacher most carefully to censor his list.

14. Physical Education Section

The meeting of the Physical Education Section was called to order by Miss Louise Freer, in the absence of Mr. Fargo, who was appointed chairman at the 1917 Conference. Miss Freer introduced Dr. J. H. Beard of the University, who spoke on "The Effect of the War on Physical Education." His address was as follows:

The Finding of the Draft and Its Relation to School Problems

J. Howard Beard, M. D.
Health Officer, University of Illinois

A fire in a theatre and a loss of hundreds of lives erected fire escapes, located exits by red lights, and opened doors outward in all the theatres of the land. The loss of the Titanic and the General Slocum were sacrifices apparently necessary to insure safety at sea. War, with its great maiming and destruction of life, has given a new meaning to human conservation and efficiency. As the dangers on ships and in public buildings were recognized but unheeded, so the useless loss of life and efficiency from preventable diseases and correctible handicaps were largely known but needed the wholesale physical disqualifications of a draft to "bring home to us a sense of guilt and shame in regard to this dreadful waste of the vigor and happiness of the race."

It is interesting to review the report of the Provost Marshal General on the first draft, to observe the large number of rejections for physical reasons, and to note to what extent they may have been avoided or cured. It may be profitable to indicate briefly how the general physical condition of the population may be so improved that in the future more than 65% of the young men between twenty-one and thirty-one years may be able to meet the physical standard for general military service. As seen in chart I, of the registrants examined, 29.11% were rejected by the physicians of the local boards and 5.8% by the camp surgeons—a total of 34.91%. Less than two men in three passed for general military service. The examinations under the first draft were necessarily a rather coarse, hurried sifting of the fit from the physically unfit, and usually did not go beyond the defect sufficient to warrant rejection. Under such circumstances, statistics of physical disqualification merely indicate the determining causes of rejection and are inconclusive as to the co-existence of defects and abnormalities of a physical or pathological nature. For example, for such causes as hernia, goiter, or flat foot the statistics are fairly conclusive, but for tuberculosis accompanying goiter or heart abnormality associated with hernia their accuracy is very doubtful.

The percentage of rejections at camp varied between 0.72% to 11.87% (average 5.8%) under the first draft, which was smaller than the national average (7.6%) for the period February 10 to September, 1918. As the physical condition of the men from the different regions of the country cannot entirely explain this variation, it must be attributed in part to different standards observed by the examining surgeons.

If the physical causes for rejection for the United States Navy and Marine Corps (Chart II) are considered, we find that sixty-nine and eight-tenths per cent fail to pass physically,—or only three out of ten men are able to enter service.

Such evidence as is now available indicates that fifty to sixty per cent of the men between thirty-one and forty-six years of age could not have met the present physical standard for military service.

As between country and city residents, the result of the physical examinations is practically a tie (Chart III). The number of men examined was taken from cities of forty to five hundred thousand, none having a large element of foreign immigrants, and distributed over ten states (Alabama, Arkan-

sas, California, Colorado, Kansas, Montana, Nebraska, New York, North Carolina, and Texas), and from a corresponding set of counties of similar total size located in the same states and containing no city of thirty thousand population. The report of Hurd is that men of draft age who hold clerical positions are the poorest physical specimens. "We shall waive the question whether deficient physical equipment impelled these men toward the inactive occupation of the clerk, or whether the sedentary life of the clerk had resulted in poor physical condition; there is probably a good deal to be said on both sides." In this connection the comparison of the relative frequency of physical defects among urban and rural school children (Table I) is not in agreement. The presence of a large number of defects of the eyes, ears, and teeth in rural children is shown by the Porter County survey (Table II). On the other hand, the tabulated results of physical examinations of city school children (Chart V), show a high percentage of defects and a considerable number suffering from malnutrition, anemia, and enlarged glands. A large per cent of the defects and deficiencies in school children have existed from pre-school age; others have come on during school attendance, but all are indicative of what physical reasons were to be expected as causes of rejections for general military service.

Causes for Physical Disqualification by Camp Surgeons

In drawing conclusions from Chart IV as to the causes of physical rejection, it should be borne in mind that the statistics are based upon ten thousand two hundred fifty-eight records spread over eight camps. The table shows that thirty-six and twelve-tenths per cent of all rejections were due to deficiencies or defects of the eye, the ear, or the teeth; eleven and twelve-hundredths per cent to hernia (rupture) and flat foot; five and sixty-five-hundredths per cent to underdevelopment and underweight; five and thirty-seven-hundredths per cent of the total to tuberculosis.

Is this high per cent of physical unfitness an inevitable by-product of modern civilization? To what extent is it preventable? What per cent is remedial?

Approximately seventy-five per cent of the causes of physical rejection is due to defects or deficiencies of the eye, ear, and teeth, communicable disease and its complications, poor general physical condition, malnutrition, and neglected surgery.

Diseases and Defects of the Eyes

Defects of vision and diseases of the eyes caused over one-fifth (21.68%) of the total of rejection. Forty per cent of all blindness is preventable; four out of every ten sightless persons need not have been so. Ten per cent is due to ophthalmia neonatorum, which is the cause of twenty-five per cent of preventable blindness. Trachoma is responsible for a large amount of blindness—for ten per cent of the loss of sight in Illinois. At least five per cent is due to ocular injuries, a large number of which result from ignorance and carelessness. Congenital and acquired syphilis are contributing factors.

As causes of impaired vision, uncorrected astigmatism, short-sightedness and squint aggravated by close work, with or without a poor light, are of the first importance. Dufour has shown that in the schools the number of pupils with myopia and the average degree of shortsightedness increased from class to class and with the addition in school demands. This form of myopia is usually primarily due to congenital astigmatism, a very common condition, and the consequent strain upon the accommodation of the eye in the effort to see. Risley well established this causation by giving a series of cases in which the eyes had passed, while under observation, from hypermetropic to myopic refraction through the turnstile of astigmatism.

Neglected squint is an important factor in the serious impairment and destruction of the eye as a visual organ. The advice to parents that the child

who is beginning to squint will grow out of it is to encourage them to delay until the eye is blind. If parents realized the serious consequences of procrastination in dealing with a child with beginning strabismus, there would be no more likelihood of neglect than if the child had appendicitis or diphtheria.

The high percentage of rejections on account of the eyes and the above well known facts demand the eyes should be carefully safeguarded immediately after birth, that no child should begin school until the eyes have been examined by a competent oculist, and that workers in occupations where eye injuries are likely to occur should be required to adopt proper methods of protection.

Diseases of the Ear

Auditory defects were responsible for 5.94% of the physical rejections. With relatively few exceptions the deficiency of hearing and deafness were the reason for the disqualification. Middle ear deafness comprises 85 to 90 per cent of all forms of deafness. In most instances this condition had its origin in the nasopharynx and extended to the ear by way of the Eustachian tube. Approximately 30% of the deafness in the United States is said to be due to the suppuration of the middle ear in childhood. Ten per cent of the discharging ears of children are complications of scarlet fever, measles, or other acute communicable diseases; in 90% diseased tonsils and adenoid tissue are predisposing causes. Tomlinson found that systematic aural examination in adenoid cases disclosed a high percentage, about 75%, with some grade of ear involvement.

If the noses and throats of children were properly cared for, and infectious disease effectively controlled commensurate with present knowledge, class repetition would be decreased, and deafness reduced to an unimportant percentage.

Defective and Carious Teeth

Rejection of 8.5% of the registrants on account of their teeth occasions no surprise in a nation where bad and decayed teeth is a disease of the masses and where 70% to 90% of all children in the public schools have defective teeth. Had military requirements been less liberal a much larger percentage of disqualifications would have resulted. Instruction in oral hygiene, the examination of teeth of school children at least twice a year and a public clinic for the benefit only of those unable to consult a private dentist would give the coming generation a digestion, a set of teeth, and a beauty of countenance unequalled by any of its predecessors.

Hernia

Hernia was the cause of 7.47% of all rejections. A number of the ruptures encountered were congenital or were superinduced by anatomical abnormalities. On the other hand, undoubtedly, chronic constipation, faulty posture, lack of exercise, and improper clothing, with resulting flabby abdominal muscles; and bronchitis, and sudden strain were important factors in its production. Hernia is largely preventable. Its presence in young adults is proof of neglected surgery.

Flat Feet

If flat feet were considered and treated with reference to their pre-disposing causes, physical rejection on their account would be much less than 3.65%. Flat feet should be recognized as weak feet before the flattening of the long arch has developed and the usual train of symptoms are noted. The body weight normally passes through the center of the knee, a little to its inner side, down the leg through a line represented by the crest of the tibula, through the ankle and over the dorsal of the foot to the second toe. When we find the foot everted (rolled out), this relationship is immediately changed and the body weight no longer passes over the dorsum of the foot to a point corresponding to the astragalo-scaphoid articulation. As soon as this abnormal

relationship is established, just so soon is there demanded of the foot sustenance of the body weight bearing down upon its highest point. It is simply a matter of time before it gives away. (Ogilvy.)

The importance of muscle insufficiency, improper nutrition, and communicable diseases in the production of flat foot are shown in the following table, taken from the statistics of Ehrenfried:

Children under 12 years of age examined	1000
Children with debility of the feet	440
Congenital—club-foot	18
Ideopathic—physical debility	95
Secondary, due to some other condition	327
A. rickets	200
B. cases unsuspected infantile paralysis	107

Obviously, measures to provide proper nourishment for children and to control communicable disease will aid not only in the prevention of foot disabilities, but many more serious ailments.

Undevelopment and Underweight

Poor general physical condition accounted for 5.37% of the rejections. This creates no surprise when it is known that from fifteen to twenty-five per cent of the school children suffer from malnutrition. Regardless of whether this condition is an expression of an oppressive physical environment, unhygenic home surroundings, or to lack of adequate or sufficient food, it is an important factor, though not the only one, in the development of tuberculosis, enlarged glands, anemia, chorea, protracted convalescence, and decreased resistance to infection. The same undevelopment, bad home conditions, and lack of physical training which contribute so largely in the production of sub-standard physical development produce pressing problems for the teacher, the physician, the sociologist, and the penologist.

Physical Fitness of Women

While we have available no such extensive statistics for women as for men, fragmentary evidence and comparison of the findings of the medical inspectors of schools in the case of boys and girls do not indicate that the women are of better general physique than the men. All of the major causes for physical disqualification under the draft are by no means peculiar to the male and may occur to a greater or less degree in the female. The first draft, therefore, may also be considered a more or less accurate index of the physical development and defects of the women of the nation between the ages of twenty-one and thirty-one. From the viewpoint of racial vitality and progress the physical development of women is as essential as that of the men—the prevention of disease and physical handicaps perhaps of greater importance.

Medical Supervision of Schools and Physical Education

A survey of the causes of physical disqualification in men twenty-one to thirty-one years does not warrant extreme pessimism in regard to the physical deterioration of the manhood of the nation, as a number of the defects are anatomical, largely preventable, and do not indicate sub-standard general physical condition. They are, however, an overwhelming, unanswerable argument for the immediate adoption of a comprehensive system for the promotion of child welfare, for the medical inspection of schools, for instruction in hygiene, and for thorough, rational physical training as a means of national preparedness for peace and for war. It demonstrates that knowledge which prevents the loss of health should be of primary importance and should not be superseded by mind-decoration or mind-ornamentation. It teaches that in developing the child the gymnasium and library, the classroom and the playground, the laboratory and the great outdoors are coordinate.

Physical handicaps in so large a part of our population require the immediate adoption of: (1) medical supervision of schools, which should include a school nurse service; (2) education in hygiene and sanitation; (3) physical training for all.

Medical inspection of schools should apply to buildings and equipment, as well as to the mind and body of the children. About twenty million children, nearly one-fifth of the population of the country, are compelled to spend, on an average, five hours a day in school 160 days a year. Under such circumstances as effective precautions should be taken to insure proper ventilation, lighting, heating, furniture and general sanitary conditions in the school to provide for the child's physical welfare as to enforce its attendance. It is obviously unfair to require a child to occupy a seat likely to produce body deformity or to study in a light that may impair its vision, yet this is done thoughout the nation. It is equally unjust to bring together a number of young persons at an age when most susceptible to communicable diseases without medical supervision, unless the school is to provide a great disease exchange for the community. In this connection it must be remembered that the twenty million children of elementary school age come in contact more or less intimately with approximately twelve million others of pre-school age. These younger children are very susceptible to the infectious diseases and are in the age group in which ninety per cent of the mortality occurs.

A careful medical record is an essential preliminary to any system of physical training. It should include the disease history of the child on entry, physical defects discovered, diseases noted, height, weight, and other important measurements indicative of physical growth and development. It should accompany the child from grade to grade, and should show its progress in physical development and in correction of defects as revealed by a periodical physical examination.

Physical education should have as its purpose the development of the functional power of the child to the highest level consistent with the most successful training of its intellect; it should meet the needs of the weak, who require it most, as well as the strong; it should be devised for all ages; its progress should be determined by tests and measures of development, strength, agility, endurance, and ability to do. Its proficiency should be based upon well defined accomplishments, and not upon two or three periods of exercise for a semester or for a year.

In general, provision must be made for the physical education of three classes of individuals: (1) the physically normal; (2) the sub-normal; (3) the abnormal and physically defective.

The physically normal student should not only be required to take exercise to develop him generally, but he should be encouraged to select some form of sport and to acquire a fondness for it. In the primary school it may mean games and outdoor exercise; in the high school or college the development of an "athletic hobby" to keep him in "fighting trim" when required to lead a sedentary life after graduation.

The subnormal individual, underweight and understrength for his age, undeveloped but organically sound, will require special and general exercise to meet the tests of normal. Having shown his ability by passing the required efficiency tests of normal, he may be further educated as in the first class.

In the abnormal group we find individuals distorted as to posture or carriage, but who may become greatly improved or who may overcome their deformity by corrective gymnastics. In this class we also have the cripples and those with heart lesions, hernia, diseases of the joints, etc. A number of these individuals could be cured by proper surgery, and would be, if their parents were so advised by a medical inspector in whom they had confidence. All would be greatly benefitted by special calisthenics and other light forms of exercise under medical supervision. In many instances members of this group have been led to attach too much importance to their condition. Nothing will

REJECTIONS for PHYSICAL DISQUALIFICATION

FIRST DRAFT

Total Examined by Boards
2,510,706 100 %
Total Accepted by Boards
1,779,950 70.89 %
Total Rejected
34.91 %
Rejected by Boards
730,756 29.11 %.
Rejected at Camps
5.8 %

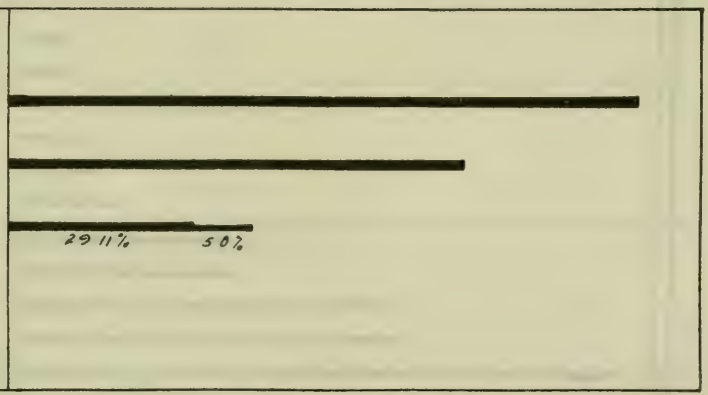


CHART I

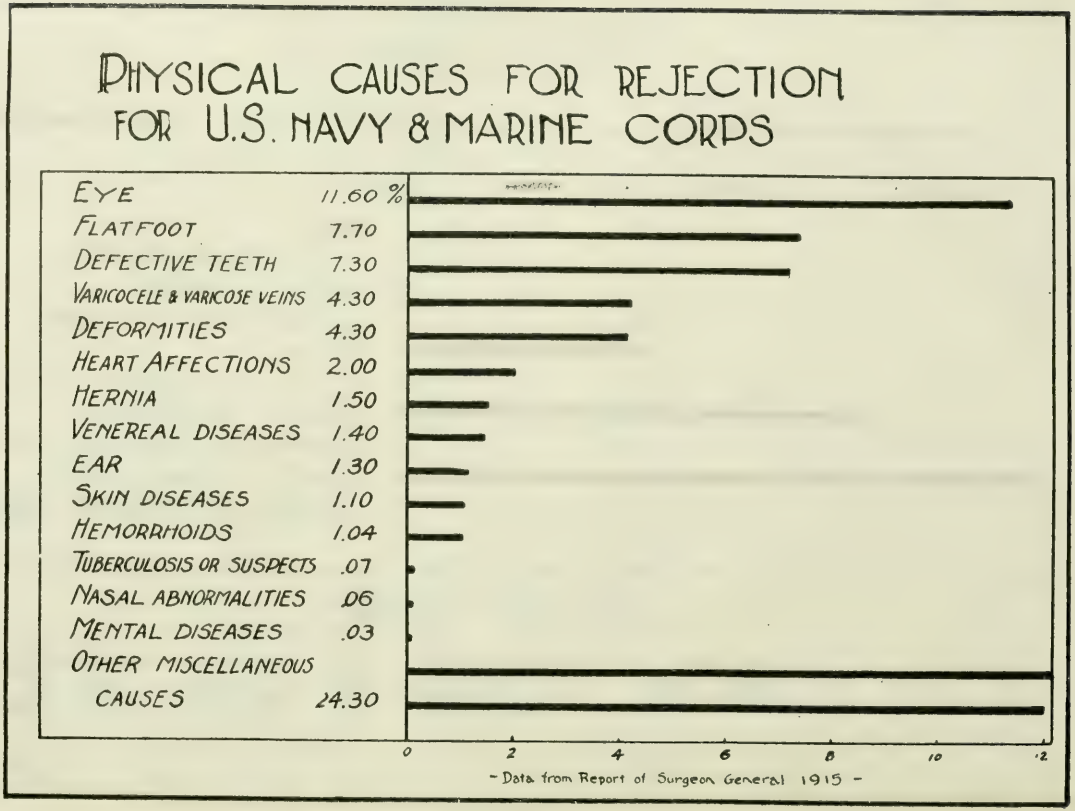

PHYSICAL CAUSES FOR REJECTION
FOR U.S. NAVY & MARINE CORPS
EYE 11.60 %
FLATFOOT 7.70
DEFECTIVE TEETH 7.30
VARICOCELE & VARICOSE VEINS 4.30
DEFORMITIES 4.30
HEART AFFECTIONS 2.00
HERNIA 1.50
VENEREAL DISEASES 1.40
EAR 1.30
SKIN DISEASES 1.10
HEMORRHOIDS 1.04
TUBERCULOSIS OR SUSPECTS .07
NASAL ABNORMALITIES .06
MENTAL DISEASES .03
OTHER MISCELLANEOUS CAUSES 24.30
0
2
4
6
8
10
12
- Data from Report of Surgeon General 1915 -

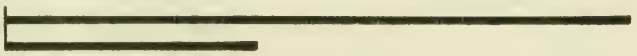
CHART II

URBAN and RURAL REJECTIONS

URBAN AREAS

TOTAL PERSONS PHYSICALLY EXAMINED 35,017

Accepted	25,048	71.53%
Rejected	9,969	28.47%



RURAL AREAS

TOTAL PERSONS PHYSICALLY EXAMINED 44,462

Accepted	32,030	72.04%
Rejected	12,432	27.96%

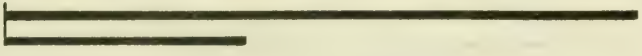


CHART III

PHYSICAL CARE OF RURAL SCHOOL CHILDREN

RELATIVE FREQUENCY OF PHYSICAL DEFECTS AMONG RURAL AND URBAN SCHOOL CHILDREN

	Per cent	
	Rural	Urban
Adenoids	11.5	12~24
Defective hearing	12.1	5
Defective teeth		
6~14 years of age	68.5~31.2	
14~18 years of age	20.2~16.1	
Primary grades		50~75
Grammar grades		10~30
Diseased Tonsils	15.4	6~12
Refractive errors requiring glasses	6.7	28

-Data from W. S. Cornell's "Health and Medical Inspection of School Children"

TABLE 1

PORTER COUNTY, IND. SURVEY

Boys 1253 Girls 1235

CAUSES		BOYS	GIRLS
EYES	Astigmatic	39.40 %	36.30 %
	Needing glasses	5.30	8.20
TEETH	Two or more defective	54.50	44.20
EAR	Impaired hearing	13.00	11.30
HERNIA		0.40	
HEART DISEASE		0.60	0.40
TUBERCULOSIS		0.10	1.00
MENTAL STATUS	Exceptionally retarded	1.20	
	Defective	0.90	
RESPIRATORY SYSTEM		35.40	32.20
GOITER	Noticeable enlargement	26.70	43.30
	Slight	27.60	24.30
TRACHOMA		0.40	0.20

- Data from U S. Public Health Bull. 77.

TABLE II

PHYSICAL CAUSES for REJECTION

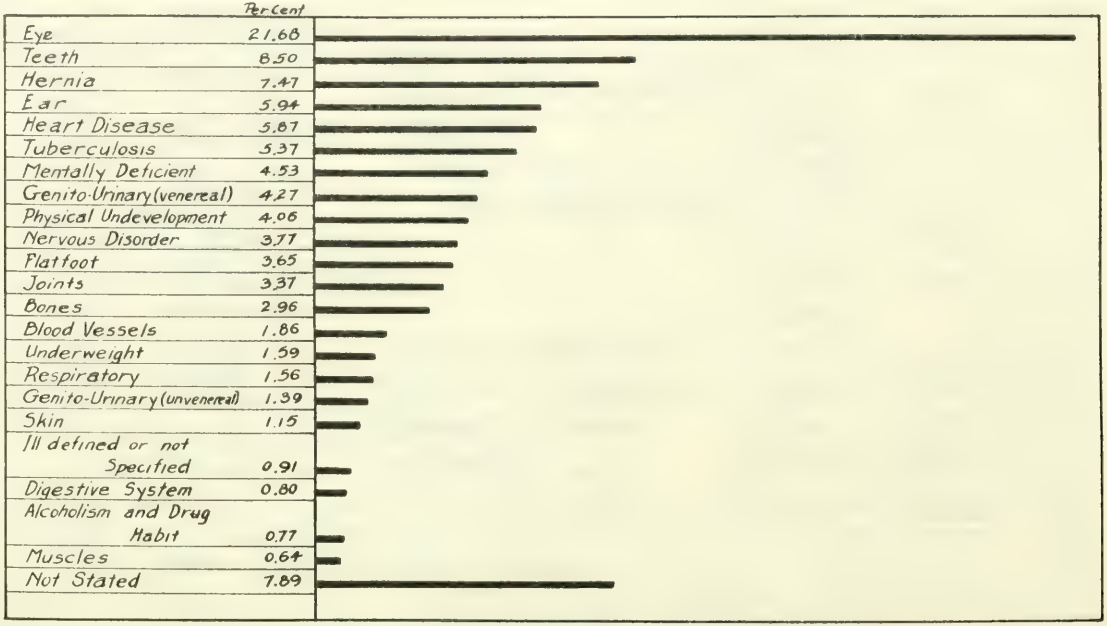
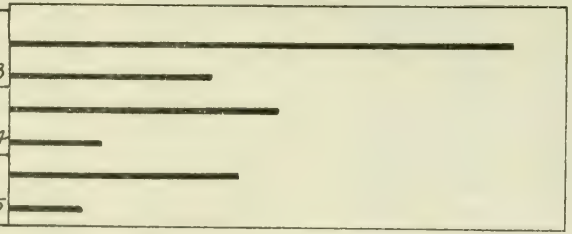


CHART IV

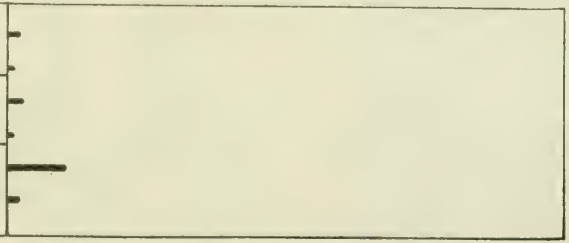
TABULATION OF THE RESULT OF PHYSICAL EXAMINATION OF SCHOOL CHILDREN CHICAGO, ILL.

	1916	1917
PHYSICAL EXAMINATIONS PERFORMED	191,225	77,693
NO CHILDREN FOUND DEFECTIVE	101,237	34,284
NO. CHILDREN ADVISED TO SEEK TREATMENT	88,044	28,355



DEFECTS FOUND

MALNUTRITION	4,806	2,550
ANEMIA	5,401	2,902
ENLARGED GLANDS	21,690	3,758



Data from Monthly Bulletin City of Chicago Municipal Tuberculosis Sanitarium

CHART V

do more than safe, beneficial exercise to lift them from the despair of chronic invalidism to the enthusiasm of physical well-being.

Physical education transcends mere exercise—it teaches temperance, self-control, courage and endurance; it produced the ability to play the game to the end and to lose with a smile or to take victory with modesty and magnanimity; it Americanizes and de-hyphenizes by the democracy of the playground and by the catholicity of its games. It places the nation on the solid foundation of morality, physical soundness, and vitality.

In conclusion, the draft has been a great inventory of the human resources of the nation. The material, in the main, has been found to be of a good grade, but the many preventable and remedial defects and deficiencies revealed by the physical and mental examinations of recruits are a patriotic call to the teacher, the physician, the sociologist, and the legislator to insist that reconstruction shall include thorough, scientific promotion of child welfare, provision for medical supervision of schools, and a comprehensive program for physical education.

A discussion followed in which a number of points were brought up. Miss Baker, of Normal, asked how often a child should have a medical examination. Dr. Beard thought at the beginning of every school year. Dr. Beard suggested that draft statistics were a new and impressive means of awakening the public to the need of physical education. He also said that a pupil should be failed if he did poor work in physical training, just as he would in any other subject in the curriculum.

Miss Helen Marjorie Hull, of Oak Park High School, Chicago, gave a paper on "The Organization of Physical Education in the High School."

Physical Education of the High School Pupil: Organization

The subject of physical education of the high school pupil is one so large and encompassing, that I am afraid if I started out to deal with the whole, there would be no time left for the business meeting, so I shall take up one of its first and most important phases; its organization. Before beginning, on this subject, I cannot help congratulating each and every one of you physical directors upon the great privileges you have of working with the high school girl. Some one has described girls of the adolescent age as "a number of awkward, apparently irresponsive bundles of legs, arms and middy blouses." Still I congratulate you, for to you is entrusted these impressionable minds and growing bodies under more favorable and receptive conditions than any other teachers.

Every where in this country, and now beginning in England, France and Russia those interested in the welfare of our girls, are awakening to the value of organization in different lines. With the growth of these clubs and associations among the girls, the girls themselves are awakening to greater co-operative action and confidence in the value of their service. We, too, who have such an inspiring and delicate task, must give organization, very careful consideration, if we are to accomplish our worthy aims and ideals.

Now, what are our aims and ideals? We must have definite ones and keep them constantly before us. Schools are fast learning the value of physical education, but today we must go farther, as the times demand broader civic

and social responsibility. Judging that our aims and their development must be somewhat alike, I have here set down an outline of our Oak Park organization.

A. Aims—

1. Physical and social leadership
   a. Physical
      1. To create all-round development
      2. To create good habits of hygiene
      3. To create habits of healthful muscular activity and recreation
   b. Social
      1. To create mental habits of clear thinking and good judgment
      2. To create ideal civic habits, as: order, obedience, promptness, self control, honesty, loyalty, imitative, co-operation and fair play

} Which will continue in after school life and fit for greater service.

B. Development of Aims—

I. Emphasize individual physical development
- Freshmen gymnasium
- Tennis
- Golf
- Skating and Tobogganing
- Walking

II. Emphasize individual in her relation to the group
- Advanced Gymnasium
- Hockey
- Indoor Base Ball
- Basket Ball
- Volley Ball

III. Emphasizes both I and II with practical demonstration
- Leader's Class

IV. Girls' athletic association co-operates with physical training department, and stands for
- High physical ideals
- Interest and information of its members concerning P. T. and Hygiene.
- Promotion of Athletic recreation.
- play and wholesome

Every efficient physical training department makes out a complete schedule at the beginning of the year for each day and hour of work, during and after school sessions. Well trained teachers know the value of exercises and sports, and select them in order to obtain the best and quickest results for the individual. Hygiene talks are given a place on most schedules. With us, two days every month are set aside for a gymnasium recitation. Each member gets up before the class, and her poise in walking and sitting is corrected or commended by the class. Questions regarding the value of exercises and hygiene are asked by the instructor. Together with this, the grading of every student each month, gives us more of an opportunity to help the individual physically and socially.

Many physical training departments lose their prestige in the school among the office force, teachers and pupils alike, by lack of organization. Office records, excuses, bills, etc., are not kept correctly or up-to-date. Lack of order on the gym floor and in the locker rooms, and on the athletic field, together with a dusty and poorly ventilated gymnasium, does not teach pupils hygiene and

civic pride. Neither does after school practices and athletics that are not scheduled bring promptness and regular attendance. Often where there is a rest room in connection with the gymnasium, the rules of health are utterly disregarded. The soiled linen and blankets are seldom changed, and the room is dark, cheerless or poorly ventilated.

Some departments are so overworked that they feel they have to let these essential details go. Work out some timesavers! The bulletin board is a great help. For example, where you have large numbers and there is indoor and outdoor work with different kinds of apparatus, such as skates, racquets, hockey sticks, etc., signs such as these inform the student at a glance what is expected and there is no delay, SUITS HOCKEY WRAPS SKATES.

Those fifty minute periods that most of us have are all too short. The bulletin board also serves for schedules of games and other information. Hold the student responsible for your notices if the boards are to be of any value.

With the department well started, it is time to organize the athletic association. Here, again each of us has her own problem. At the start the simplest organization is the best. With increased enthusiasm and interest comes increased demand for more complex organization. Again may I quote from our own organization: Our business meetings are conducted according to Roberts' Rule of Order. Records of the secretary and committees are accurately kept. This teaches dignity of meeting and gives business training. Each business or social meeting called has a definite purpose. Our plan for the year is somewhat as follows:

I. Sept. — Regular Business. Report on summer recreation.
II. Sept. — Picnic. Each advance class girl invites a freshman girl, and tries to show them what good times girls have together, and to interest her in our association. The ticket sale comes after this.
III. Oct. — Business Report on ticket sale, get acquainted with new members, learn our songs and cheers, and our rules.
IV. Nov. — Hallowe'en party. Talented members of the upper classes give program of readings, dancing, singing, instrumental. It gives the younger girls a better vision of what high school girls are working for.
V. Dec. — Xmas party. The aim is service. A tree and gifts are brought for a children's home.
VI. Jan. — Business. Talks on hygiene and personal subjects by the girls.
VII. Feb. — Skating party.
IX. Mar. — Business. Talks on the value of exercise, and on leadership, by the girls.
X. May — Business. Vote on numerals and banners, and elect new officers. Plan for summer recreation.

Numerals are offered in all different sports. A banner, the equivalent of twelve points is the goal. The numerals awarded during each year are sewed upon the banner. Every girl working for a numeral must attend three out of the five business meetings. She must be passing in scholarship. If a girl spends the required time in practice of a sport, and gets the value out of the exercise, but is *not* proficient in the sport, her numeral is withheld until she acquires a fair degree of skill. This means that although a Freshman girl may not become proficient the first year, she is credited with her numeral, and whenever she reaches the required standard, she is awarded the numerals earned in the past years. In this way her interest is caught and held. Four numerals counting toward the twelve points must be of the following: tennis or golf, leaders class, skating and walking. As we have facilities for skating and tennis we are encouraging these sports, for they will be used in after school life.

With our afternoons so crowded, we have arranged points to be given according to the number of hours spent in exercise.

	Points
Leaders—	
Three hours per week—10 mo. gives I gym. and one leader numeral.... This includes two hours of gymnasium work and one hour of teaching and coaching. The girls learn to organize and direct groups. They must be responsible and self reliant.	2
Advance Gymnasium—	
2 hrs. per wk. 10 mo. I gym. numeral	1
Tennis—	
Three hrs. per wk. 3 mo.=one point..... They must report the practice every week and participate in fall and spring tournaments.	1
Golf—	
Three hrs. per wk. 3 mo. same regulations=	1
Walking—	
Two miles per day 10 mo. one numeral= Must walk not less than one mile at a time and once a month with the director, and report the number of miles every week.	1
Hockey—	
One hr. per wk. 3 mo. one numeral=	⅓
Volley Ball—	
One hr. per wk. 3 mo. one numeral=	⅓
Indoor Ball—	
One hr. per wk. 3 mo. one numeral=	⅓
Skating and Tobogganing—	
One hr. per wk. 3 mo. or equivalent=	⅓
Pageantry—	
One hr. per wk. for 3 mo. one numeral=	⅓
Perfect attendance and no tardiness for 10 mo. which shows that a girl is not only prompt and regular in habits, but is keeping fit, gives one numeral	⅓

Any organization to be effective must have advertising. The paper of the community, and the school paper are glad for contributions. The girls watch the progress of their society, and other girls see that it is a live issue and wish to join. A large memory book which contains newspaper clippings, photographs of the class teams and pageants, snapshots of the officers, and clippings about former members who are making good in college, not only serves as a record but interests the present school, and is always a delight to the graduates in recalling "them happy days."

The value of a trained teacher with an attractive personality, cannot be over-emphasized. She must not only be well prepared, but keep well prepared; one who is cheerful, kind, tactful, with insight and sympathy, one who knows when to be a "teacher" and just "one of them." She must not only be a leader herself, but be able to develop leadership in others. A teacher who loves her work easily creates an interest and value in it by her own enthusiasm, and by her spirit of joy in wholesome living. Somehow this spirit is very penetrating. It has often been said, "The difference between a good coach and a great coach, is that a good coach is one who teaches merely the technique of the games, while a great coach also relates the experiences in play to the more serious

game of life." Thus it is with our organization, whether it is to be merely a good organization or a great organization. In closing, I should like to add one thought. A principal in answering a letter from one of his former physical training teachers said, "I was glad to hear of your success in formal drills and dances, but I am more happy to know, as I do from your work with us, that you are counting in the lives of the young people. That is our business."

In the discussion which followed Miss Hull said, in answer to questions, that all girls in the Oak Park High School were urged to join the Athletic Association; that is, that membership was not based on athletic ability, and that dues were twenty-five cents a year. Two days a month are given over to posture examinations given by the class and the teacher. Twenty per cent of upperclass girls elect physical training. The classes above the first year are mostly in athletic games and dancing.

After this discussion the regular business meeting was held. The election of officers for the 1919 conference was the first business. Miss Freer was elected chairman, and Miss Baker and Miss Bussell members of the committee in charge of the program. A fourth member, who will be a high school principal, is to be appointed by the chairman.

In the absence of Miss Clark, Miss Baker presented the report of the committee on an inter-high school girls' athletic league. Miss Baker read a proposed model constitution for a high school athletic association, and a constitution for a league of high school associations. Miss Hull stated that such a league would be a great stimulus to the formation of local organizations. The question was raised whether such a league would work with the boys' state athletic league. Miss Baker replied that the two leagues were to be entirely separate, and that the awards given by each are for different accomplishments. It was pointed out that constitutions develop through use, and that the constitution adopted should be short and elastic. A discussion of point systems resulted in the conclusion that each local association should be free to make its own. Miss Baker's report was adopted by vote of the section.

Miss Hull was nominated as president of the State League, and unanimously elected. Miss Baker was elected vice-president, Miss Breitstadt secretary-treasurer, and Miss Hildebrant of Harvey, and Miss Lyman of Monmouth, members at large. The meeting was adjourned till afternoon.

Miss Edith Hildebrant, of Harvey, spoke on "Corrective Gymnastics."

The Aims of Physical Education

EDITH HILDEBRANT

The program announces that I am to talk on "Corrective Gymnastics." I shall in good time touch upon that very subject, but in addition to the remedial aim of physical education, I wish to discuss briefly several other outstanding immediate aims and also to consider for a moment the ultimate aim. Many people, especially among those who are not conversant with the subject of

physical education, regard bodily perfection as the one and only object of our endeavor.

If *to secure physical perfection* were the sole end and aim of physical education, perhaps we could not severely censure the misguided zealots of the age of asceticism, for denouncing as lost any time or effort devoted to the development of the body. Of course they might have spared themselves the trouble of gouging the flesh, slitting the tongue, and hugging cellar walls. But we willingly grant this: To build a perfect structure of flesh and bone, just for the sake of having a fine specimen, and without a noble function in mind for it to perform, is an extravagant waste of power and purpose. The prize-pig at the county fair may appear to be perfectly symmetrical, its bodily organs may all functionate properly, and it may have a host of ardent admirers, but who wants to be a pig?

It happens though, that the physical self is so inalienably linked with the mental and spiritual being, that effort made to develop a clean, symmetrical body, wholesome and undefiled, is rewarded with superior intelligence and moral uplift. We nourish, cleanse, clothe and exercise our bodies not merely because of the simple pleasures afforded by the actions, but because we see through these acts a deep significance—we see that by thus carefully building and training the body we acquire an infinitely valuable means of expressing that which is good and true and beautiful. And here let it be said that the care and training must be given not with grudging and distaste, but with some degree of pleasure. If we cannot enjoy our food, if we cannot appreciate the fragrance of sweet-smelling flowers, if we cannot feel delight in the sunshine and the rain, if we cannot look with pleasure upon the beauties of Nature nor listen with rapture to her melodies, it is because our tastes have become perverted, our senses are blunted, the avenues of instinctive gladness are closed. We have submitted to unnatural conditions for so long that we can no longer appreciate elemental virtues. We fail to see their relation to high endeavor.

The ultimate purpose in building a good physique is not the expenditure of *physical* energy, but rather of *intellectual* and *spiritual*. The amount of these that a person can expend depends greatly upon his physical resources. One of the most sacred duties of every individual is to keep, in purity and preparedness, that body which was intrusted to him for the service of humanity, in order that he may present it "a living sacrifice, holy, acceptable unto God, which is (his) reasonable service."

Another important aim of physical education is to *promote health*. A perfect form does not insure health; neither is health synonymous with physical perfection. A finely developed gymnast may be the victim of a lingering disease; conversely, an apparently delicate person may possess excellent health.

Health is a relative term. It applies only to that condition of the body which permits the mind to carry on its work unhampered by physical weakness. That condition may be the proud and lasting possession of anyone who will begin early enough in life to put into action the simple laws of hygiene. Physical education teaches these laws, and shows us how to make them automatic in their operation.

One phase of our subject then is concerned with all problems that are related to the science of health. In this connection exercise stands out prominently as a factor that contributes to the physical well being. But no matter how carefully and faithfully exercise is taken, its beneficial effects may be neutralized by injurious practices unless one understands the relative value of the other essentials of health living.

In ranking exercise as a health factor, we must give precedence to air, water, rest and food. Of almost as great importance as bodily activity are bathing, clothing, and housing. Hygienic physical education includes then along with other things which will be discussed later, a knowledge of these health agents, and a practical application of those principles involved that have a bearing upon the harmonious development of the individual.

Let us consider another aim. Life affords numerous influences that tend to destroy vital force. Many occupations require the use of a certain few muscles over and over again. Owing to the minute division of labor which characterizes our present age, it is not unusual to see a life spent in ringing up fares, in pushing a small lever, or in executing some other simple task that brings into play only a small set of highly specialized muscles and nerves. In order *to provide a change of activity,* and so to give relief to overstrained tissue, as well as exercise to unused portions of the body, we turn to physical education with its wonderful array of games and sports. That phase of physical education that is designed to restore the vigor of the individual and to send him back to his tasks with renewed energy is called recreation. It comprises largely games and sports, though other forms of activity, for instance, swimming, dancing, gymnastics and various kinds of work rightly claim a power to recreate life.

The test of recreation comes in determining how fully it renews bodily, intellectual, moral and spiritual vigor. If one increases his power through a change of organic activity, he is justified in providing and taking advantage of such change. Often it is not rest that is needed, or even play, but rather a relief from a certain kind of strain. This may be afforded by taking up a different task by changing from mental work to physical, or vice versa, or even by changing from one task of either type to another. The fundamentally important thing is to select the change that will best offset the devitalizing effects of enervating tasks. A game of tennis or golf, a quiet hike, the performance of gymnastic exercise, a vigorous contest, possibly a few minutes of swimming, skating, riding or rowing, will transfuse the hours with new joy, greater power and clearer vision.

Now let us take up the remedial aim. It sometimes happens that the functions of the various bodily organs become deranged. Nutrition may be poor. Deformities sometimes appear. The individual occupies a plane that does not permit of the expression of his true self. In such cases it becomes the province of physical education to remedy bodily defects and thus to restore working power. This usually results in raising the standard of living by correcting the habits that have caused the deterioration.

Medical gymnastics are divided into two classes: those for curative purposes and those for corrective purposes. Exercises of the former type are used to good advantage in the cure of gout, rheumatism, ænemia, constipation, nervous disorders, and so forth; those of the latter in correcting faults of posture, which task is an important part of our work in physical education. Good posture favors the healthful action of the internal organs. It also enables a person to conserve power, and so gives a peculiar fitness for achievement. Because of the unnatural strain on muscles and ligaments, more nervous and muscular energy is expended in holding a poor position than in maintaining correct bodily equilibrium.

The most common antero-posterior faults of posture, that is, those seen from the side, are protruding head, hollow chest, drooping shoulders, round shoulders, round back, hollow back, tipped pelvis, bent knees and weak or flat feet. Looking at the body from the back we may observe scoliosis, or lateral curvature of the spine, accompanied by a high shoulder, prominent hip, large arm waist angle and unequal contour of neck and body. So long as these faults are merely postural or functional, they can be corrected in a few weeks, or months at the most, largely by means of exercise. Where they have become structural or organic as for instance when the vertebræ have become misshapen, months and sometimes years of persistent effort are required to overcome the deformity. In extreme cases forcible correction procured through the application of a plaster of Paris cast or some other device, is necessary. The purpose of exercise under such conditions is to improve the general health, and to strengthen the muscles so that in carriage the deformity is less marked.

The habit of correct carriage can best be acquired by first training the muscular sense to discern between correct and faulty positions, and then strengthening the muscles that maintain good posture. In taking corrective exercise it is important that all free movements be done in what is known as the *keynote* position. This may be determined by having the subject stand with one arm raised upward and the other sidewise, or one arm out and the other down, or both up, or both sidewise. Experiment will show in each case just how the greatest amount of correction can be secured.

Important as is the correction of deformities when they exist, the keynote to the whole situation is prevention. Probably the largest organization that is actively engaged in this work is the American Posture League. It has done a great deal in a scientific and educational way to standardize and improve conditions that affect the posture of the human body.

It has designed a number of movable chairs, for use in school, library, and factory; also a child's seat for use in a baby carriage or automobile. In co-operation with the Brooklyn Transit Company, New York City, the League has introduced into the Broadway subway cars a type of seat that favors the development of good posture. It has also designed various articles of clothing cut along healthful lines. Prominent among these is the Right Posture Suit for Boys. Boys' coats are commonly cut so that the collar interferes with proper development by forcing the head forward. The coat to which we refer is made upon the correct model. Miss Jessie H. Bancroft, President of the League, has devised the triple test with which everyone here is familiar. As you know it consists of judging each child's posture in standing, in marching for four or five minutes, and in selected exercises.

There is probably no more essential factor in the maintenance of good posture than the awakening of pride in the possession of a fine bearing. Of course, harmful influences must be removed and plenty of invigorating exercises must be given to enable the muscles to do their part. It is true that faulty posture sometimes results from a defect in the bony structure, a condition with which a person may have been born. Then there are numerous contributing factors, such as standing or sitting on one foot, carrying excessive burdens, especially when borne one one side, wearing ill-fitting clothing, and specializing in a single sport, particularly one that develops certain muscle groups at the expense of others, but it must be confessed that a lack of pride and perhaps a mistaken notion as to what constitutes good posture, and even sheer laziness are responsible for many of the deformities that we see daily.

If one is employed at work that favors a bent position, he will need constantly to exercise sufficient will power and muscular force to overcome the tendency toward faulty posture. This is vitally important from the physiological point of view, since the organs can not perform their functions properly if cramped or sagged. It is also exceedingly important from the aesthetic point of view, since, as we know a person with drooping head and shoulders, a round back and protruding abdomen commands little respect, whereas one who keeps his spine erect, gives evidence of self-respect, and hence inspires the esteem of others. Education in regard to the physical well-being is usually sufficient to insure comparative freedom from disease and deformity.

At the risk of violating the principle of emphasis, I have given more time to the discussion of the remedial aim than can be given to any of the others. I did this, not because I regard it as most important, but because I did not wish to talk off my subject more than about nine-tenths of the time. Now let us see what additional purposes may be accomplished by physical education.

Often an individual lacks nervous stability and poise. He has failed to develop economical habits of action. His muscles are not under his control, and so if they respond at all they do so at unseasonable times, and sometimes in a manner that makes their helpless possessor appear ridiculous. Movements made are self-defeating. The lost motion involved results in a tragic waste of energy. To develop poise, to give the mind control over the complete or-

ganism, to cultivate speed, skill, grace, and related qualities, in other words, *to train the neuro-musculo-glandular apparatus by first rendering* one conscious of every part of the body and then unconscious of its structure and workings, constitutes another important aim.

Scientists have long understood the close relation between muscles and nerves. It is only quite recently, however, that the action of the glands in producing activity has come to be understood. It appears that through all of the ages when the brain has been initiating and controlling voluntary movement and the muscles have been producing it, several ductless glands, the thyroid, the thymus and the suprarenals, have been providing substances that have had a very important bearing especially upon the nutrition of the muscular tissue and upon the transmission of the nervous current from the periphery to the brain or spinal cord, and then back again.

Voluntary movement is effected then by the united action of the nervous system, the muscles and the glands; hense the name neuro-musculo-glandular system. The training of this particular system constitutes one of the most important aims of physical education. Exercises that make the united action of all organs more effective increase the effciency of body and mind by developing qualities of educative value.

In enumerating the aims we must not fail to recognize the social benefits to be derived. These have already been emphasized today by Miss Hull, but I feel, and I believe she does too, that they are not likely to be over-emphasized. Loyalty to the team or to the school represented is cultivated in such games as baseball and basketball. Interesting group activities like folk dancing develop the same attribute. This loyalty manifests itself later in one's service to family, church, the state and the nation.

A player soon learns that he cannot "play the game" successfully unless he co-operates with his fellows. Personal interests must be subordinated to the interests of all concerned. In games, especially in team games, he unconsciously and consciously acquires the ability to act, and forms the habit of acting, harmoniously in a group with others. So physical education provides a way *to develop co-operation, loyalty and other like qualities all of which* become of inestimable value to the individual in many phases of his later life, especially the social, industrial, civic and religious.

Games, all except solitaire, have a powerful, socializing influence. In the gymnasium one gets a wider acquaintance with his fellow-students than could possibly be gained in a recitation room. He comes into contact with human nature free from the mask of convention. He sees "Who's Who" in a very real sense, and he finds that the best opportunity in the world to choose his comrades. We do not really know people until we have played long and hard with them. The stress of games brings out innate traits of character. Friendships formed on the field of play often last a life-time, and the wide acquaintance gained them through games proves its value in later years when forward meets half-back in the business world, when captain meets crew on the great sea of life.

Now we come to the ethical values that may be derived. Dr. Beard has already placed considerable stress upon these. They range all the way from the first degree of unselfishness to the noblest form of self-sacrifice. It takes an abundance of courage to rush into a burning building and rescue a life. That sort of demand is readily met by him who in his youth, upon the gridiron, has repeatedly rushed into the thickest of the fray, rescued the elusive pigskin, and with daring born of grim resolve has struggled against the fiercest opposition, finally to emerge free to win the coveted goal—all for the honor of the school.

You are no doubt familiar with the story of the ancient Greek who, when his rival fell during the race, waited for him to recover himself, before proceeding. Whether or not he won is a matter of small moment compared with the fact that he revealed such sportsmanlike qualities. The moral possibilities

of adequate physical training are greater than all others combined. A certain basketball team with a winning record is reported to have played on a slippery floor in a strange gymnasium against people of superior strength who were accustomed to the conditions. This team lost the game. Upon returning home the members wrote an account of it for their school paper, commending the play of their opponents and making no mention whatever of the unfavorable conditions under which they played. Surely it required great strength of character for a generally victorious team to accept this defeat with such good grace, in the eyes of their friends both in school and out. Where do we find a better opportunity than in the field of physical education *to cultivate self-control, sportsmanship and moral courage?*

Physical education promotes clean living. An understanding of the purpose of the body and a knowledge of its functions and proper care cannot fail to raise one's moral standards. After all, a person's ethical conduct is no more nor less than the purposeful contraction of well-trained muscles. His character depends upon how he organizes his habits of reaction. Instant response to commands of the will gives the power of self-direction. It is the repetition of muscular movements, together with the inhibition of untimely impulses that gives staying power, that yields courage and prevents foolhardiness and that makes self-sacrifice easy. A practiced man or woman finds it no great hardship to give up his possessions for the common good, even his life if need be. Too often in play has he sacrificed what to him at the moment was his all in all. Manliness and womanliness are the crowning attributes developed by training.

The aims of physical education—to secure physical perfection and to promote health, to provide a change of organic activity, to remedy bodily defects, to train the neuro-musculo-glandular apparatus, to develop social attributes and to cultivate the finest ethical qualities—these aims naturally fall under six heads: Hygiene, recreative, remedial, educative, social and ethical.

All of them blend to produce a harmonious development of the individual —harmonious in that every structure of the body is enabled to perform its proper function, and harmonious furthermore in that the individual is better adapted to his environment. Body, mind, and soul grow apace. He who climbs the highest intellectual and spiritual heights has a due regard for the physical; for in order to insure the greatest mental achievement and the highest moral and spiritual development the body must be regarded as a component part of that great trinity in which its marvel and dignity are co-ordinate with the attainments of the mind and the aspirations of the soul.

A stronger, finer race of beings is the natural outgrowth of adequate physical education; hence the development of such a race constitutes the ultimate aim. In order to achieve this aim, training must be given not simply to a select few who naturally are very fond of exercise and who could readily dispense with its benefits, but to everyone, man, woman and child. The standard of the people as a whole must be raised.

As we look back over the ages we see that nations tottered and fell just as surely as the masses ceased their physical activities. The Olympic festivals in Greece which at first were open to all, finally degenerated into games for a highly trained few; and Greece fell. Rome built huge amphitheaters where multitudes of her people assembled upon set occasions to witness the performances of a handful of professionals; and Rome fell. In all modern countries where a competitive sport attracts a host of spectators the majority of whom scarcely know why they yell, let alone having the qualities that would enable them to engage in the activity that evokes the yell, there behold the germs of decay. Dr. Charles W. Larned says, "I claim that no people can achieve a progressive civilization on a decadent physique, and that a sound body is of greater importance to society than a mental development at the expense of health. Vigorous men and women are the prime essential to healthy evolution, and cannot be purchased at too high a price."

In answer to questions Miss Hildebrant said that lantern slide talks on posture were very effective in the Harvey High School. Miss Hull said posture tests were successful at Oak Park. Miss Baker thought individual talks with girls at the time of their physical examinations were the best method of interesting them in good posture.

A discussion of ways of interesting teachers in the physical education section followed. Miss Freer suggested that a letter be sent to all physical education teachers in the state in the fall of 1919 to announce the program of the section. The High School League will send out a letter to all high schools to interest them in the league, and this will also rouse interest in the Conference.

Miss Freer spoke of the opportunity for physical education due to the present reorganization of the curriculum. Greater emphasis is being placed on health and hygiene and physical education will be given a larger place.

The meetings of the section closed with a demonstration class in the Women's Gymnasium.

15. Physical Science Section

The meeting of the Physical Science Section was called to order by the Chairman, Dr. B. S. Hopkins, of the University.

A nominating committee was appointed to nominate one member of the Conference Committee for a term of three years to succeed Dr. B. S. Hopkins whose term had expired. Dr. B. S. Hopkins was elected to succeed himself. Dr. J. B. Wallace of Gilman, was designated as chairman for the coming year and Thos. M. Barger as secretary.

The morning session was held in Morrow Hall and in spite of adverse conditions our attendance was nearly as large as preceding years. Thirty-three were present at the opening of the program.

The following program was presented:

Morning

"The Value of Project Study in the Teaching of Physics"—C. F. Phipps, State Normal School, DeKalb, Ill.

(Mr. Phipps was unable to attend and Dr. Hopkins read the paper)

"Project Studies in Physics and Chemistry"—J. W. Shepherd, Chicago Normal College.

"Teaching the Chemistry of Iron"—K. C. Jones, Rockford, Ill.

A most interesting and practical discussion of the airplane, illustrated by models and pictures, was then given by Lieutenant W. P. Lukens of the School of Military Aeronautics.

Afternoon

The afternoon was given over to the joint session of Science groups.

Below are given the three papers of the morning session:

The Value of Project Study in the Teaching of Physics

C. F. Phipps, DeKalb

Defects in the Teaching of Physics

Many charges have been made in recent years against the methods of teaching Physics and other high school sciences. These charges have not been wholly confined to high school sciences, but have been launched against college science, and even against science as taught in the grades. I will be more specific and recall to your memory some of the charges made against high school physics:

"High school physics is a hodgepodge, a mass of disjointed stuff, not met with in real life." "School work, especially in science, is too artificial, not real." "Most of the subject matter taught remains unused, both in out-of-school hours and in after-school years."

"A big problem of the school is that there is very little relationship between the work of the school and the work of the world."

"Our physics text-books are too much on the order of encyclopædias or dictionaries, and their proper function is for reference only."

"We lack books for high school and college which present science as living projects."

"The teacher and the text-book writer invert the natural order of learning by attempting to give the pupils a second hand glimpse of science which is organized, systematized and formalized to such an extent that it neither appeals to the average student, nor leads him to connect it with real life."

"The basic error in science teaching today is that it does not center itself about the interests and desires of the students."

I am sure that you, as teachers and principals, recognize some or all of the above charges. Have they not had some influence, because of the truth contained in many of them, in causing the falling off, as compared with some other subjects, in the number of students taking physics?

A few years ago eleven business and professional men in our city of Springfield submitted to an examination on 5th, 6th and 7th grade work. They all failed. Why? Undoubtedly they would have made a worse failure in an examination on the so-called fundamental principles of physics. What is the reason?

We have the preparatory fallacy in our high schools,—preparing for college. Happily this is being changed somewhat, and we should continue to use our influence against this method of teaching, and urge more of the kind that follows the laws of the pupil's mind, psychological organization, etc.

Many of the defects in high school teaching are due to the fact that many college graduates are teaching in the high schools. These untrained teachers carry to the high school pupils the methods of teaching which they had thrust upon them. Such teachers of physics talk over the heads of their pupils and give to them isolated facts, theories, fundamentals, mathematical problems, etc., without associating them in the least with the pupil's life or experiences. Like their college professors, these young teachers confuse the logical with the psychological order in the presentation of facts.

The experienced teacher, the really good teacher, knows that the logical order is the result of mature reflection, and close analysis of a large body of related phenomena, and that this comes late in the history of intellectual development.

He knows also that the psychological order,—the true order for teachers to follow—is the one concerned with the intrinsic interest and practical significance of the phenomena in question.

Needs in Physics Teaching

Physics deals with so many things connected with our home, community and school life, that it is a very important study in the education of our youth, if it is presented right.

Half a century ago there were fewer inventions and up-to-date conveniences, so the people of city and farm were relatively more efficient than now in the use of things belonging to the field of science. These inventions have multiplied so rapidly that home instruction in their use has been unable to keep up with them, so the burden of making the youth efficient has fallen upon the school. The school, however, is failing in this efficiency work.

To quote Von Hofe—"The men of today is expected to know the essentials of an auto; how to adjust his radiator when no heat comes from it; how moving pictures are made; how electricity is generated in power houses. The woman of today must know how to use fireless cookers and gas stoves in the most economical way; she must understand her electric iron, percolator and washtub motor; she should be a competent judge of materials of which kitchen utensils are made; she should be able to read her gas and electric meters, and in other ways be up-to-date and efficient. Therefore we must educate the boys and girls in school in a practical way to learn these things. The public demands scientific knowledge more than ever, and the schools must meet this demand."

Why do we as mature people, and why do high school students, go to the literature of the Auto Co., to learn about the workings of our battery and the methods of repairing them, rather than refer to a physics text book? Simply because the business firm sends out literature which satisfies us, and explains in a practical, instructional way, the workings of the battery, and touches closely and appealingly to the project we have.

We do not enjoy reading or studying dry, unrelated facts, principles, theories and fundamentals, and pupils who are merely immature men and women, do not enjoy them any more than we do.

Should the school compel the student to do distasteful and difficult things just because they are distasteful and difficult? Is the only alternative to allow him to follow his whims and do as he pleases? President Butler of Columbia says truly that, better than this alternative is to search for the pupil's empirical and natural interests and to build upon them. But this requires knowledge, patience and skill on the part of the teacher.

What is Project Study?

Many of these defects and needs in the teaching of physics can be met by the project method of teaching.

What do we mean by the project method? One writer says that "project method is merely the method of research *adapted* to the age and capacity of the pupil. It is the natural method of all scientific workers, for great scientists such as Galileo, Newton, Faraday, Pasteur, Darwin and others, always followed the project method."

Today the progressive man in business and in other lines of work outside of education, uses this method.

Another writer says, "A project is a problem-exercise, a special variety of question and problem. A problem is a question demanding the organization of knowledge and the exercise of judgment before the answer is given."

Again, "A project is a motivated problem, and, as such, its solution requires thought, and its completion results in the production of something of value to the student. It is a small sample of real life brought to the school."

"A project is the topic transformed into a problem which appeals to and grips the pupils."

Advantages of Project Study

A project is always concrete. It develops traits required for a successful career in life.

There may be individual projects in the school and in the home, and also there are community projects. A community project undertaken by a school lacks the personal appeal, and does not give complete training to each student. The nearer that projects approach the character of *individual* school projects, the more valuable they become as educational devices. Pupils can be made to walk alone by attacking real projects. To master a project the pupil sees the need of knowledge. If it is a school garden or agricultural project the knowledge gained is recalled each year, it is used over and over again and thus becomes a part of his mental life. Thus project study improves the student's attitude towards his school work, and, indirectly improves school spirit.

We must organize the subject matter in physics around the knowledge of the pupil, around some of his life experiences, and in so doing we will take into account his aptitudes, his accomplishments and his requirements.

Dewey says that "There is no real thinking without a problem. When judgment is challenged to face a dilemma, it makes a fork in the road, and thinking begins here."

A nice or perfect result in a project is not necessary to obtain educational value from it. If the student acts from a worthy purpose, like making a piece of furniture in the shop for his mother, he has received educational value even though the task accomplished shows very poor workmanship.

Some foes of project study have characterized it wrongly. They have said that it is "merely entertainment for the young who are not ready for serious science." Or, "It is a device for getting hold of deficient students and keeping them from making trouble or from leaving school." Or, "It is a new thing, a fad."

I think that we cannot call it a new fad when it is as old as the work of the master scientists. When we consider that a pupil gets from a good project educational value by way of purposeful, independent thinking, by participation, and co-operation, besides getting information, self-satisfaction, and pleasure from the work, I believe that we are justified in demanding that project study should be more extensively used in schools.

Thinking, exercise of judgment, and organization are three educational tests offered by projects. Following these come application, initiating and executing, all having educational value.

For some good results of project study notice the interest of children in the war garden movement throughout the country, and the valuable results gained by them from the work.

Was it not one object of Congress to foster the project method in agriculture when it appropriated $5,000,000 annually to assist and stimulate the work among students? More recently Congress has undertaken to aid the states financially in doing better work by having broader trained teachers and more project work in vocational studies.

Difficulties to Face in Project Study

I confess that there are difficulties in the way of teaching physics and other subjects by projects. A teacher must keep from 25 to 50 pupils busy, either in the recitation room or laboratory. To do this and leave the initiation of progress to each individual student is a problem.

Again, suitable projects are scarce. We must devise a series of them which can be brought to the attention of students by the earnest teacher.

Some entirely good projects are too big, or too expensive, or require too much time, to bring them into the school.

Projects are not always suited for giving a whole class a complete idea of subjects studied.

More time is required for projects than is necessary for recitation, laboratory or shop work. Also broadly trained teachers are lacking.

Again, many teachers feel the necessity of hurrying through their subject in order to cover ground, and they are apt to conclude that project-teaching is inconsistent with the requirements for information getting. We may reply to this claiming (1) that right habits of thought are more important than most information; and (2) technical knowledge and skill are not necessary to project study.

It is possible that results obtained from this method of teaching may be made useless, or even harmful. For example, by employing the factory method and setting pupils to making parts, doing the same thing over and over in a class project. This would stifle initiative, thinking and independence.

Concrete Illustrations

I know that my hearers are feeling that I should give a more concrete touch to this paper, and tell of personal experiences perhaps in using the project method, and suggest a list of projects that may be used at once in your work. I will take a little more of your time in endeavoring to give a few concrete illustrations, and suggesting some projects applicable to physics teaching. I will limit my remarks on this topic, for this phase of the general subject of project study will be presented in detail by others who will present papers this morning and in the afternoon session.

When teaching a class of high school boys one year, we took up some projects in electric wiring. Several small, roughly made rooms were used in the manual training department. These rooms were made by boarding up three sides and the ceiling, leaving the front of each open. In them the students worked out in detail a number of projects in electric wiring of homes for door bells, call bells and lighting. The interest was keen, thinking was stimulated and the results educationally were good, even though not all of the individual work was neat or perfect.

At another time a practical electric burglar alarm for windows in a home was worked out, and some students installed them in their homes.

The relative humidity of the school rooms and home was another project, with experiments to determine a more efficient means of making and keeping the air moist enough for the best comfort and health.

Air, heat, combustion, and other general large topics are not projects, but phases of these which touch the individual's life, or present a problem to him, are projects. The propellor of an airship, sending a wireless message, the relation of air pressure to the barometer and the weather, *are* projects. The following suggestive projects may be added to the list:

Electroplating projects, with possible determination of electro-chemical equivalents.
Gas burner adjustments and gas stove economies.
Gas and electric meter readings and cost of gas and electricity in the home.
Calibrating and comparison of mercury and air thermometers.
The making of a pen filler or eye dropper.
The making of electro magnets and factors necessary to strengthen them.
The making of a magnetic compass.
The making and installing of an electric cell and push button.
Making telegraph instruments and sending messages.
Making and calibrating a barometer for home or school use.
Making a barrel water filter for home.
Electric pump and pressure tank for rain water in the home.
Best combinations for pulleys to do certain kinds of work.
Take pictures with home made pin-hole camera.
Determine the speed of sound across a field.
Mechanics of the cream separator.
Mechanics of heating a home with steam, hot water or hot air.

Make blue print paper and take pictures of magnetic lines of force about magnets.
The principle of iron ships floating.
The mechanics of the gasoline engine and its work in running an auto.
How does the self-starter in an auto work?
Many problems in the physics of the farm.
The principle and working of a storage battery.
Mechanics of the weighing scale.
Efficiency of a fireless cooker.
Mechanics of an auto body.
Mechanics of a farm tractor.

In submitting this incomplete list of possible projects for a physics course, I am well aware that you who give laboratory work in this science will be ready to say that you are now requiring many of the projects in your laboratory work, therefore are using the project method. But are you really assigning the laboratory exercises in the form of an individual project? Do you give the pupil a series of questions and problems related to the project, which must be worked out? Are these questions such as will make the pupil think? Are you suggesting to the pupils experiments which are related to the project? Do you require these experiments to be worked out either in the laboratory, before the class, or at home?

Examine your method and determine whether you are giving the pupils a real project, a practical one, which is calling forth *all* of his mental energy, interest, initiative, and his eagerness to go on and tackle other projects, because of the gains received in pursuing worthwhile objects.

Project Studies in High School Physics and Chemistry

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We are gathered here today to sit in judgment on the use of physics and chemistry in secondary school education. Stated in terms of law perhaps we may say we have instituted a friendly suit against ourselves. The case on the docket reads: State of Illinois vs. High School Physics and Chemistry.

I. The Charge

Again we are charged with teaching a kind of physics and a kind of chemistry which are not selected with reference to their use by the boys and girls for whom they exist. We also are accused with having a distorted perspective of teaching in which too little emphasis is placed on the *process of learning.* These accusations are not new; we have heard them before; in fact, it is, perhaps, partly because we have heard them so many times that again they receive attention.

At first thought it seems this perennially resurrected charge lacks sincerity, and seems also to be based on ignorance of the facts, because all my life I have heard and believed that our public schools were founded, and are maintained, for the best interests of our future citizens. During my early experience as a teacher I well remember many times and in many places hearing serious and deliberate consideration given to various school subjects in relation to their use in a preparation for life. The great slogan was that schools are maintained to prepare children for living. Later I remember also when, in order more firmly to ground ourselves in our fundamental educational doctrine, our phraseology was changed from "a preparation for living" to "a preparation in living." I am frank to admit that this change in statement may have resulted from an uneasiness on the part of leading educators that the former statement was inadequate. The view that education is a preparation for living may have regarded education and other phases of living as analogous to a mixture of

chemical compounds. But when we stated that education is a preparation in living, we thought of education as analogous to an element in a chemical compound which we call—*life*. If these analogies are true, then we may take it for granted that school procedure and life outside school cannot be too closely allied.

Purposeful Living

How does life go on outside school? The more satisfactorily we can answer this question and the more specifically we can agree on the processes by which living proceeds the nearer together we will be in our final verdict. How, then, does life go on outside school? As witness in this trial I must answer publicly and now; you may answer later, or not at all. If you do not agree with me, I grant you the right to disagree. If my answer is not adequate, it is because my experiences are inadequate.

II. The Evidence

In my opinion, living takes place essentially in a series of approved and correlated undertakings. The more clearly defined the undertaking is, and the greater the degree of approval given it, the more clear cut and positive will be the response. Each undertaking in life functions in two directions. First, in order to proceed it breaks up into smaller units or undertakings. These smaller undertakings are subordinate to and justified by the larger undertaking. Secondly, each large undertaking, itself composed of smaller ones, is part of a still larger undertaking. Purposeful living seems to occur in a series of coordinate and subordinate undertakings. Perhaps a few illustrations will make clearer my meaning.

Those of us here today who are directly connected with schools came to this conference because we approved a definite undertaking, perhaps: *an attempt to improve school procedure*. From the instant we approved this undertaking our actions began to conform to it. The undertaking broke up into smaller units; we obtained leaves of absence, arranged to be away from home, procured transportation, lodging and board, and even planned our program of meetings. Every one of these smaller units is subordinate to the larger one, and is justifiable only because of the larger undertaking. But this larger undertaking is not the goal, because it in turn is part of a still larger undertaking, perhaps *an improved citizenship*. The clearness with which we saw this series of conferences as a definite opportunity to learn how to improve school procedure, and the degree in which we approved the undertaking, the more positive and clear cut has been and will be our behavior with respect to it.

My next illustration will deal with a larger group of people. Early in the year 1917, we entered the world war. At once we set out to accomplish or fulfill the definite, approved national undertaking—*an adequate, efficient American Army in the least possible time face to face with the Armies of the Central Powers*. This gigantic undertaking immediately broke up for execution into smaller undertakings, such as; conscription of men, officers' training camps, cantonments, ship building, food regulation, liberty loans, Red Cross activities, and a score of others. Each one of these minor undertakings, tremendous in itself, was not only subordinate to, but also always justified by the larger undertaking. For example, when certain people opposed conscription, what was the outstanding fact upon which their arguments smashed and crumpled? Simply this: our deliberate and specific national undertaking—*an adequate efficient American Army in the least possible time face to face with the Armies of the Central Powers*. Why did we train army officers and commission them after a training far less rigorous and far less adequate than is required at West Point? Again we justify our course by turning to the specific and approved undertaking, namely: an adequate American Army face to face with the Armies of the Central Powers and in the least possible time. What "put over" the liberty loans, the generous support of the Y. M. C. A. and Red Cross? One

and all could make the same reply, because they were allied agencies subordinated to the definite, approved undertaking, namely: an adequate American Army face to face in the least possible time with the Armies of the Central Powers. This undertaking was and is subordinate to a still larger one—*a league of democratic nations.*

Other illustrations might be given, but I believe they are unnecessary. I submit the point to you. Does the evidence which I have given justify me in my opinion that living progresses in a series of approved and correlated undertakings?

Physics and Chemistry in Relation to Life Outside of School

Just here it seems relevant to consider the relation of physics and chemistry to life outside of school. Do physics and chemistry have a part in our undertaking? Let us see.

The Allies and the United States deliberately chose to conquer the submarine. This was their undertaking. Physics and chemistry came to their aid. How could the depth bomb have been thought out and produced without an understanding of the transmission of pressure through liquids?

Our armies decided to protect as far as possible their men from murderous fire when they went "over the top." That was their undertaking. The new protective agency in warfare—the barrage—could not have been conceived without an intelligent application of the physics which underlies the recoil in large guns.

The army undertook to improve their methods of locating and following enemy armies; also to attack them when mobilizing for movement. The unruly, tricky aeroplane was quickly developed into the stable and dependable machine capable, so the report goes, of flying a distance of twenty miles entirely under self-control. An application of engineering physics fulfilled the undertaking.

With what success could the Allies and the United States have prosecuted the war without T. N. T., and yet Tri Nitro Toluol could not have been produced and used without an intelligent application of chemistry.

What would have happened to the Allied Armies long ago if the gas mask had not been invented. The conception and production of the gas mask is an engineering feat in chemistry.

In undertakings connected with the World War, physics and chemistry have done the lion's share. Imagine, if you can, the people of the Allied Nations and of the United States ignorant of those phases of physics and chemistry which were applied in the World's Greatest Conflict. No fleet of submarines, battleships, and cruisers would now be sailing from German waters to surrender. On the contrary, all of us long ago would have been absolutely under German control.

Physics and Chemistry in Times of Peace

Let us turn aside for a moment from the ravages of war to productive times of peace. Do physics and chemistry serve our undertakings then?

In memory I go back to my boyhood days which were spent on a farm. I shall never forget my varied autumn experiences connected with the approved undertaking—*wheat sowing.* I well remember being knocked about by the handles of a walking plow as it unsteadily moved from clod to clod. As I came along later with harrow or drag frequently I had to hop about somewhat like a jumping-jack in order to avoid the harrow or the drag as it climbed over some of the more obstinate clods. That was not all. When the wheat drill came along, seed wheat was deposited on some of these clods with a seed bed scarcely deep enough to cover the grain. Every one who has had a similar experience in farming knows that the crop of wheat as well as my disposition was inevitably influenced, and for the worse, by these clods.

Late in August of this year I returned to my old home country. I visited a prosperous young farmer whom I had known as a youth. He too was plowing for wheat. I looked for the characteristic clods and there were none. The soil was turned over evenly and mellowed. Instead of walking and being

knocked about, he was riding and undisturbed. Instead of plowing an acre and a half to two acres per day, he was plowing six to eight. He was plowing four or five times as much as I was able to do, and was doing it easier and far better than was possible for me. Not only that, but the clods were mashed and the more obstinate they were, the finer they were pulverized. His harrowing the plowed ground was far easier and more successfully done than was mine. His seeding the field also was easier and his grain inevitably will be better than I could hope for. Why all this wonderful change? One word answers—tractor. When we think of the thousands and tens of thousands of these machines which will many times multiply the man power on farms, we may have some notion of the great value to farm undertakings of intelligently applied physics.

In this great University under whose auspices we are now meeting, as well as in other places scattered throughout our land, experimental studies are constantly being carried out with a view to utilizing physics and chemistry for a better control over plants. As a definite undertaking this University has set out indirectly to increase greatly the land values in the broad prairies of this state by making possible more and better land products per acre than are now possible. When the University succeeds in its approved undertaking, the accomplishment will be directly through an intelligent application of physics and chemistry to plant production.

Every industry, in these days, to be successful must use recognized applications of physics and chemistry, and indeed most all large manufacturing plants now carry a corps of investigators trained in physics and chemistry. They must determine, for example, tensile strengths, and crushing strengths of raw materials and manufactured products, and also be able on demand to duplicate any product desired.

At the close of this war we will have a spectacle, analogous to the famous conception of "beating swords into plow shares." This time it will be the conversion of high explosive plants into dye factories, and the transformation is possible only through an engineering knowledge of chemistry.

It is not necessary further to elaborate the use of physics and chemistry in times of peace. The examples cited might be multiplied until one's imagination would stagger under the load. The world is increasingly making use of physics and chemistry in doing its every day work and the limit of this service will be determined by the fertile imaginations of physicists and chemists yet unborn.

Undertakings Must Be Approved and Correlated

If, as the evidence seems to indicate, purposeful living takes place in a series of approved and correlated undertakings, and furthermore, since physics and chemistry serve us admirably in such undertakings, we may now turn to a consideration of what is *comprehended* by the terms—*approved* and *correlated*. All undertakings thus far cited were *approved* by those who engaged in them and also these undertakings were *correlated*.

What takes place when one approves an undertaking in which he is to embark? First, he chooses the undertaking for himself; secondly, he plans the accomplishment of the undertaking and then, thirdly, he executes his plan. These steps are vital to the success of any undertaking. A brief consideration of these steps follows:

Choice Involves a Consideration of Values

When one chooses an undertaking, he passes judgment on its value to him. In the process of making his choice he weighs the pros and cons involved, and the clearness with which he sees all pros and cons involved in his situation the greater is the assurance that the undertaking will be successfully completed. The estimated value which is involved in his choice becomes the incentive for, and mainspring to, his subsequent action. If an individual proceeds vigorously in the prosecution of an undertaking which he has chosen, it is because his

estimate of the value of the undertaking to him is high; if he is not wholeheartedly in his undertaking, it probably is because he sees comparatively little in the undertaking for him.

The delightful and astonishing way in which the American Army grew up almost over night is direct evidence of how behavior responds to estimated values. Every young American soldier in France today valued most highly his undertaking when he chose it and then set out from farm, village, or city to become a fighter for his Country's Cause. The world stands in amazement and is bewildered at the rapidity with which he grew into an efficient soldier; and when an estimate is made of him as a soldier, we must unquestionably take into consideration his own valuation of his own undertaking—and this valuation grew up in the process by which he chose to take his place in the American Army.

My first illustration of an undertaking, you may remember, was that concerning our attendance at this Conference. I said the undertaking was *perhaps* "an attempt to improve school procedure." Why did I say perhaps? For the very good reason that I could not state it with more certainty. It is easily conceivable that some of us may have come primarily to see certain departments of the university with a view of qualifying for special work. In such cases, the undertaking would not be "an attempt to improve school procedure," but would be: *to become a chemical engineer, a specialist in Agriculture,* or some other equally definite undertaking. Ordinarily we must rely on behavior to certify an undertaking. Perhaps this is why we have such expressions as "Actions speak louder than words."

One of the most important things in life is to have a "singleness of purpose" which means there is no confusion of undertakings or harmful coordinations of them.

Detailed Plans Follow Choosing

When one chooses an undertaking, his choice becomes a spur to the accomplishment of the undertaking and he then is ready for the second step—making a plan. In life, it is of the utmost importance that detailed plans be made for successfully carrying out any chosen undertaking. Planning will vary necessarily in difficulty—depending on the undertaking, but the point is that all undertakings require plans for their fulfillment. If the world gave adequate attention to planning for the carrying forward of undertakings chosen, we would not hear so often such expressions as "too bad, because he intended well"; or "good intentions, etc."

The Execution of a Plan Follows Its Making

The real value of a plan is revealed in its execution, and without this execution a plan is worth little. The execution of the plan is the goal of the undertaking. *At every step in the execution of a plan, the continuously changing estimated values of the undertaking together with the clearness and practicability of the plan give the punch to the execution.* We must not forget that the first two steps in any undertaking, choice and plan, are of little or no practical value until they come to fruitage in this third step, execution of the plan.

The Significance of Correlated Undertakings

The earlier part of this paper dwelt on the fact that undertakings bear a double relationship to other undertakings. In life outside of school, every undertaking (1) breaks up into smaller ones which spring from and are justified by the parent undertaking; (2) this parent undertaking itself is but a part of a still larger undertaking which bears a similar relationship to this parent undertaking that the parent undertaking does to its smaller ones. Most of us see the parent undertaking and its smaller ones, but we vary in the degree

with which we see clearly the larger undertaking of which the parent undertaking is but a part. We recognize the difference in clearness with which people see the more inclusive undertakings by our reference to them as "having vision," "blind to the consequences," and such homely phrases as "unable to see beyond his nose."

It must be clear that in the life of any given individual his inclusive undertakings are small and immediate at first and that through practice they become larger and less immediate in time but no less clear; also from time to time they give more and more stability to one's actions and better prepare him to take his part in the world to which be belongs.

An example of correlated undertakings already has been given; if any others are needed we can supply them from our own experiences.

I wish to call attention to the negative side of correlated undertakings; that is, to undertakings that once were correlated, but afterward became misplaced. I speak of this side, because these are days of reconstruction—in education as well as other phases of life—and in reconstruction times we frequently will find undertakings losing their former values because the undertakings themselves have been readjusted. They are "out of place" or uncorrelated. Two examples will show what happens to an undertaking when it loses its setting.

I have spoken of the astonishing development of our young army in France; how it sprang forth largely as a result of its own valuation of its own undertaking. At no time from the day the soldiers left home until their undertaking was potentially accomplished by the signing of the armistice, was there a lagging in effort. Their own valuation of their own undertaking was the impelling force for accomplishment. This overseas army of ours had its counterpart in our cantonments; in fact, the overseas army itself came most largely from these same cantonments. Up to the time the armistice was signed, our soldiers at home deported themselves exactly as did the overseas army when it was here; but just as soon as the armistice was signed, there was a tremendous *letting down* in our soldier camps. How can we account for this? The recruits are from the same people of which the overseas army is composed, they were assembled in the same cantonments, perhaps even under better conditions. They have received the same kind of instruction, the same kind of training as the others, and yet have lost interest, have become indifferent, and the reason no doubt is that the value of the undertaking for them took a great slump, *because* the original undertaking was out of place. The undertaking had lost its correlation.

Another example of lost correlation is the United War Work Campaign. It is common knowledge that the drive in connection with these great social agencies has lagged almost to the point of failure. Many reasons are assigned for this. To me it seems the real reason why the seven-in-one drive has had such a hard time is because in the mind of the public it lost its correlation on November 11 and has been out of place since then. All of us know that these seven agencies zealously contested with each other in an effort to serve the men in the frontline trenches. In the mind of the American public, the individual efforts of these agencies were bent toward the general undertaking of providing comfort for our fighting men close up to the fighting line. On November 11 the fighting line disappeared. There is no longer need for hot coffee and sandwiches in the front line trenches—there are no front line trenches. The hard struggle which the United War Work Campaign is now having is due, no doubt, to its correlation with an undertaking that has disappeared. If in the minds of the American public the United War Work had been consciously related to our present undertaking, providing our soldiers with wholesome surroundings until they are discharged from service, I repeat, if these agencies had deliberately related their undertaking to the larger one just named, then, I believe the United War Work Campaign would have gone quickly "Over the top."

Purposeful Living and High School Physics and Chemistry

I have dwelt rather at length on the value of correlated undertakings and the relation of choice, plan, and execution of undertakings to their successful culmination. I have done so deliberately, because if we are to stand convicted on the charge made against our practice in the use of physics and chemistry in High School, I believe our conviction will be based most largely on these considerations.

Purposeful living outside of school takes place as a series of correlated undertakings and these undertakings proceed through choice, plan, and execution. If school life is a preparation in living, then clearly it also must conform to this procedure. If you agree with me, we now come to the crucial point in our deliberation. Does high school procedure in physics and chemistry conform to these same requirements?

Vital Importance of Undertakings to High School Pupils

Do physics and chemistry in high school proceed through chosen undertakings? If so, by whom are the undertakings chosen? If they are chosen by the pupils, good! If they are prescribed by the teacher, the value may be doubtful. We are trying in America to train people to become self-directive. Self-direction has as one of its basic factors the choice of undertakings. It is desirable to have a citizenship grow up from individuals who have had practice in making choices, it is of the utmost importance that schools furnish young people with such training.

In attempting to have pupils elect an undertaking, one often is more or less uncertain as to whether or not the pupils *really* elect for themselves that which the teacher wants them to elect. Final results show that undertakings too often should be classified as *attempts to please the teacher,* or a *desire to get a credit in the easiest way.* In the long run such undertakings are apt to inhibit growth in initiative, self-reliance, and honesty; their effect will be deadening to desirable self-determination.

Sometimes a teacher finds that a group of pupils has chosen an undertaking, but with too little consideration of what is involved. Care should be exercised to make sure pupils carefully weigh at least the major elements involved in an undertaking which they choose.

I know a group of young college students who decided to have a war garden. War gardens were popular and therefore no doubt the students were easily influenced to choose the undertaking. The instructor in charge of the class did his part fully and yet as the work progressed it seemed that what started out to be a common undertaking developed into an effort on the part of many of the students to please the instructor or at least get a credit for college work. Their behavior accorded with this valuation and for them the war garden ceased with the close of the college year. From this example it may be urged that sometimes those undertakings that pupils approve most readily are the ones which may cause much concern for the teacher.

It is immaterial who *suggests* an undertaking. The important thing is that pupils elect it, and with as full knowledge as possible of the consequences.

An Assumption

In order to proceed let us assume that high school pupils in physics and chemistry do choose undertakings in these subjects. Having chosen their undertakings, do they make definite plans for carrying them out, or are the plans already completed and delivered to them? or again, does it make any difference whether or not they make or help make the plans for carrying out their own undertakings? A glance into the outside world at once sets us right with reference to the last question. Many a man who has chosen an undertaking fails in its execution because he has no well-defined plan by which to proceed. On the other hand, there are many examples known to all of us of men who having chosen their undertakings begin at once to perfect plans for their accom-

plishment. In any country, and especially in a democracy, young men and young women are needed with practice in planning deliberately for carrying forward undertakings which they have chosen.

Another Assumption

If we grant for the moment that undertakings in high school physics and chemistry are of the pupils' own choosing and that the plans for carrying them out are, so far as is possible, of the pupils' own making, we come to the concluding point,—do the pupils carry out the plans which they made or helped to make? They should. Another glance at the outside world will be beneficial in this connection. When a man (1) deliberately chooses an undertaking and (2) plans for its accomplishment, and then (3) executes his plan, we look with approval upon him. We think of him as an individual who is dependable, who will translate a promise into action and who is a desirable member of society. On the other hand, too often we see examples of people who clearly understand the value of undertakings which they choose, who carefully plan for the execution of the undertakings, and then who fail because the plans are not executed. Such individuals are to be pitied because they have ability, are honest, in earnest, but, if the truth must be told, are not dependable. If in the early training of such individuals, they had been taught to execute plans concerning undertakings which they chose in good faith, they might have been saved to society and have become powerful in their respective communities.

This third point, *the execution of plan, often reveals to what extent the undertaking was chosen, and also to what extent the plan for its execution was made, by the one to whom the details of execution are entrusted.*

III. The Verdict

I have not attempted to dwell at length on a detailed consideration of *choice, plan,* and *execution,* with reference to undertakings in high school physics and chemistry. Such a consideration would require more time than we have at our disposal; besides, each one of us can check up best by a private study of his own teaching situation.

So far as my own experience with hundreds, yes thousands, of pupils who have studied physics and chemistry in high school is concerned, I am willing to admit the original charge, on both counts, and rest our case in the hands of a sympathetic jury. I believe we are still too far away from life in our present treatment of high school physics and chemistry, and that our methods of teaching these subjects are not chosen from the standpoint of the learner.

Even if we admit the charge made against us, we must not abandon hope. Adverse criticisms are of value when they result in constructive effort. Our hope then lies in a constructive program which takes on more of the characteristics of outside living.

Locus of High School Pupils' Interests

We are concerned with children of the adolescent age who are working with physics and chemistry in school. These young people more or less clearly see themselves as future participants in the world's work. They are interested in undertakings closely related to those of their future. They are anxious to be well prepared for future undertakings which they see coming. They will, therefore, value and choose any undertaking which fits in with their future scheme. Why not take advantage of this attitude on the part of young people? Is it not worth a renewed attempt on our part to bring high school physics and chemistry into better alignment with the avenues through which we conduct our every day affairs? Many of you, long ago, started such an attempt. These should be encouraged to continue. Many others have started more recently. These should go on. It is possible that some are content to continue the old regime. Let us hope not.

It has not been my purpose to lay out a series of undertakings to be adopted by any teacher or group of teachers, but I have felt rather that I should emphasize as well as I could the reason for such undertakings together with a method by which undertakings may be selected and carried to a successful conclusion. I will, however, give an example of an undertaking or short series of undertakings which a class of mine in household chemistry projected and carried out. The undertaking as a whole involved both physics and chemistry.

Shortly after we entered the war, Chicago changed its standard for fuel gas. The change involved the removal of hydrocarbons which had been used primarily for purposes of illumination. Gas stoves all over the city had been adjusted for the use of gas containing illuminating properties. Clearly the gas from which the illuminating properties were withheld did not require as much oxygen per unit volume for its combustion as had been furnished under the former condition. In the chemistry class, this point was under consideration when it occurred to me that the situation then and there warranted a new undertaking. I asked the class whether or not the air regulators on their gas stoves were changed when the gas standard was changed; whether or not gas at home is now economically used. Every member of the class without hesitation agreed that they would be interested to find out. They, therefore, had chosen an undertaking. By questioning them I found they had a definite reason for choosing the undertaking and the reason was of sufficient value to carry them through. The first step, therefore, was completed, namely, the selection of an approved undertaking, chosen because of its value to them.

The next step was the making of a plan by which to determine whether or not the gas at home was economically used. After considerable work involving discussions among themselves, the consultation of books, and also consultation with other people, they agreed on the following plan: 1. In making the tests, the gas should be turned on as in ordinary service, which usually was determined by the size of the flame. 2. Equal volumes of water were to be heated in each test. 3. The vessel containing the water was to be of a diameter not less than two inches greater than the diameter of the flame. The same vessel was to be used in all tests. This made necessary the cooling of the vessel before beginning in cases where a thermometer was not used. 4. A temperature interval was adopted to be used throughout the tests. This interval together with the means of determining it might vary with different students, but when selected by a given student, it must prevail throughout the tests. The temperature interval might be determined (1) by the use of a thermometer or (2) by drawing a large excess volume of water from the tap and allowing it to take on the room temperature; then this room temperature was to be used as the lower limit of the temperature interval and the maximum temperature limit was to be the boiling point of the water. 5. When a thermometer was used, the water was to be stirred thoroughly with it before temperature changes were observed for record. 6. Throughout the experiment the gas stopcock was to remain fixed. 7. The air inlet was adjusted and its position recorded for each test. 8. The hour, minute, and second at which each test began was noted and recorded. Likewise the time at which the test was finished.

Under the conditions just indicated, it was decided to rate the tests according to the time required for them. Of all the positions of the air inlet tested, that one was considered best in which the least time was needed for the test. Usually three tests were made by each student. Each student had little difficulty in determining the position of the air regulator which was best for her stove. They were surprised, however, to find their results were not in agreement. At first they thought the lack of agreement was attributable either to a difference in stoves or in the materials from which the vessels were made. A survey soon showed that neither of these factors was responsible. The class then decided that the quality of gas might not have been the same for all tests because the gas was supplied to different parts of the city from

different sources. Another survey showed that differences appeared among students whose supply was from the same tank.

The dilemma in which they found themselves led to a new undertaking; namely, a comparison of the relative values of the stoves used by the different members of the class. This new undertaking meant a new plan, made by modifying the old one.

Naturally enough the students expected that stoves of the same make would score alike, but in this they were disappointed. Some of the best and some of the worst results obtained were from the use of the same make of stove. The students were very much puzzled over the results of this second undertaking and finally decided that they should modify their plan in order to be more sure of the gas pressure in the various tests. This was decided as necessary because the rate at which heated gases move over surfaces which they heat helps determine the amount of heat transferred. Final tests of this series of undertakings have not been completed.

The students have exhibited an unusual interest, and many of the things which they thought they knew from their previous study of physics and chemistry were found missing when needed.

Summary

Perhaps I should conclude what I have to say in the form of a brief summary:

Purposeful living occurs in a series of approved and correlated undertakings. These undertakings must be seen as part of a larger undertaking. Correlation of undertakings is vital.

Each undertaking must be chosen. In school, it should be chosen by those who are to carry it forward.

Each chosen undertaking must be planned. So far as possible, in school, the planning should be done by those who are to carry out the undertaking.

The plan should be executed. In general, and especially in school, this execution of the plan should be and will be done best by those who choose the undertaking and then plan to carry it out.

Young people in high school are looking forward to the time when they will take part in the every day affairs of life. They are willing to choose any undertaking that is directed toward their future, and they also see physics and chemistry used more and more in every day life.

High school physics and chemistry may be and should be brought into closer relationship to the practices of every day living. This may be done by having the pupils: (1) choose undertakings closely related to life and which, in the opinions of the pupils have value for them; (2) as far as practicable, plan for carrying out the undertakings chosen by them; and (3) successfully execute the plans which they made or helped to make.

Teaching the Chemistry of Iron

Kenneth C. Jones, Rockford, Ill.

It has always seemed to me that in our educational meetings we are apt to talk all about method and nothing about subject matter. We talk about how to do it, but nothing about what to do. I believe that "what" we do is as important, and more important, than how we do it. So I have given my attention chiefly to the question of selection of subject matter. The project method is exactly suited to the things that I think should be taught in High School chemistry.

There is one thing that has given me a real grouch occasionally ever since I started to teach chemistry. I have wanted to register a kick somewhere, and now that I have some University and Normal teachers here to kick at, I am going to get it out of my system.

Do you know what the worst thing we have to contend with in boosting our High School chemistry work is? It is the knocking of the High School work by the College and University professors. You know what I mean. It is the old statement of the professor to the beginning student, "Your High School chemistry will not amount to anything—we would rather you had not had it." You have all heard it, I heard it when I entered the University, and it has come back from others time after time.

If there is any truth in this complaint, whose fault is it? Did we high school teachers not get our training from these same college professors? Sometimes it was pretty poor stuff we got, and by the time we passed it back to the high school boy it was worse. But it was the best we knew, was a lot better than nothing, and it was not and is not the business of the college chemistry prof to knock it. The high school teachers and the college teachers of chemistry can be a great help to each other so let us all cooperate and boost chemistry.

I think much of the trouble has been that when the college student goes out and teaches high school pupils, he uses the same old experiments and tells the same stories that he heard the college professor use. Then in a few years these high school pupils are in college. Of course the college professor does not change, so the first year's experiments are not new and the stories are old. The professor hears someone say, "I heard that in high school," and down comes his wrath on the high school course. Whether this is the real trouble or not, I believe we can improve matters by some change of subject matter in the high school course.

My plea is for real genuine practical applications. Choose subject matter for its actual serviceable, informational value to the student. Teach applied chemistry. You could teach atomic and molecular weight determinations, you might even make them interesting, but you could not make it useful to the student. The college first year course is correctly designed as the beginning of an extended course. A high school course modeled after the college is not correct for its purpose is not the same.

Get acquainted with your local industries. See what their chemical problems are and teach these to your classes. The factory heads are glad to help. They are proud of their plants and most of them are beginning to appreciate the importance of chemical service. Then prepare to give real service to these industries. Make your laboratory the local commercial chemical laboratory. We have done it in Rockford and you can do it anywhere.

For an example let me tell briefly what can be done in the study of cast iron. I take this because it has very wide use and requires no special apparatus. If you start this practical work, however, you will have no trouble getting all the apparatus you want.

If you stop at a foundry and watch them pour iron into a mold it looks simple enough. No place here for a chemist, you say. But the foundryman knows better, he knows that he has a very delicate problem. There are at least five elements contained in the iron that have very important effects on the castings. These are silicon, manganese, sulphur, phosphorus, and carbon. A variation of a fraction of a per cent of any of these from the desired amount may make the product worthless. And of course the desired amount differs with the kind of casting. So, naturally, troubles come often to a foundry without a chemist.

Now if you will put this kind of a problem up to your high school people, they will work over-time to learn the chemistry involved. More than that, they will get an idea of the real importance of chemistry in industry that they are not likely to get from a text-book. I know by the work of my own students that this work can be handled with accuracy and success in the high school. For the sake of brevity I will omit description of the methods. They may be found in any book on iron in very simple form, so as to be picked up with a very little assistance from the teacher.

When a foundry has trouble and produces castings too hard or full of holes the high school laboratory can soon locate the trouble. The foundry will change the mixture in accordance with this analysis, next day. Then the pupils in the laboratory will take great interest in another analysis to see if the desired composition has been obtained. Great accuracy is necessary and the work should be checked against Bureau of Standards samples. Accuracy is not the least important thing to be learned from this work. Some of my pupils have taken great interest in a long series of analyses of the iron which is going into aircraft parts for the government. They have rendered considerable service thereby and I am well satisfied with what they have learned in comparison to what they would have learned from ordinary experiments in the same time. I am convinced that this type of project work has great teaching value.

There are many things besides iron which are needing your service. Supervision of community water, gas, milk, and food supplies were among the first things that called to our attention the need and advantage of using our laboratory for real commercial work. Make your laboratory render genuine service. As a last word, do not try to revolutionize your whole course, but "pick out one thing and get it done."

16. Social Science Section

The morning session of this group was given to the discussion of "What a Syllabus for the High School Course in American History Should Contain." Unfortunately no record was kept of this session, although the discussion was a very interesting one. Dr. R. M. Tryon, of the University of Chicago, made a report as chairman of a committee provided for last year. This report, which was the basis for the discussion, we are able to give only in outline as it appears below. Miss Elizabeth Gaynor, of Urbana, led in the discussion, which became quite general.

What a Syllabus for the High-School Course in American History Should Contain

R. M. Tryon, University of Chicago

I. Introductory.
   1. A statement of the particularized objectives of high school history.
   2. A statement of the particularized objectives of American history in the high schools.

II. The Library and Its Use in American History.
   1. Objectives of history requiring a library to accomplish.
   2. Principles underlying the selection of the books composing the high school history library.
   3. The twelve best reference books for American history.
      a. The list with a page or so of comment on each book.
      b. A chart showing how the books are distributed over the entire field.
   4. A classified list of books for high school library in American history.

III. Equipment Other Than Library.
   1. List of syllabi and other aids for the teacher.
   2. Charts and maps.
   3. Illustrative materials.

IV. General Organization of the Field of American History for Teaching Purposes in the High School.
   1. Name and date boundary of the six or eight main divisions.

2. Per cent of time to be given to each division.
3. The six or eight main topics under each main division.

V. The Six or Eight Maps to Make Including the Main Features to be Shown on Each.

VI. A List of the Significant Dates with the Event Marked by Each.

VII. The Significant Personages.
1. A list for chief emphasis.
2. A list for minor emphasis.
3. Three hundred words about anyone in the list for chief emphasis.

VIII. General and Special Method of Procedure.

IX. Attainments—Summary of What Each Student Must Know and Be Able to Do on Completing the Course.

X. The Organization of Each Topic Under the Main Divisions According to the Following Scheme:

	Name of big topic here			
What to Teach, an outline of in detail	References other than the text; also topics for special reports with exact references for each	Pivotal questions, exercises and things to emphasize and do	Source and illustrative material; maps and charts to use in the recitation and study periods	Dates and personages to know; and maps and charts to make

For some reason the Section failed to take action on the appointment of an executive committee and secretary for the following year. This duty has therefore devolved upon the Conference Director in consultation with some of the members of the section. The committee for next year is as follows:

M. L. Flaningam, Urbana, Chairman, 1920.
U. S. Parker, Quincy, 1921.
A. C. Cole, University, Secretary, 1919.

Afternoon Session

The afternoon session was called to order by Prof. E. B. Greene, who presented Prof. L. M. Larson of the University of Illinois. Prof. Larson spoke on the subject "Nature and Content of a War Issues Course."

In his address the speaker dealt entirely with the course in War Issues as it is found in the curriculum of the University and the natural interest that High Schools have in such a course at the present time. That this course was introduced as a required subject for the S. A. T. C. who are preparing for the Officers' Training Corps.

The school year is divided into periods of twelve weeks. The first period takes up for discussion the causes of the war: How the war came to be. In the second period the various institutions of the different belligerents are studied and in the third the points of view of

these countries as expressed in their literature, by their writers and philosophers.

The following are some of the questions which require a week or more of study: German Empire, Balkan question, Development in Germany and commercial rivalry with England, Pan-Germanism, Disintegration of Russia, Downfall of Turkey.

The text book being used in the University is Holt and Chilton's History of Europe from 1862 to 1914. The authors are West Point men who have given us a book from the military point of view. Very few teachers are prepared to teach military history.

There is every reason why a War Issues course should be taught in High School. It will be some time before we cease to talk about the war and it should be taught for the benefit of the generation to follow. It can be correlated with English, American, or European History but it deserves a place by itself in the course.

Upon introducing a course in War Issues in High Schools many difficulties will be encountered. The first of these will be a lack of suitable material. Literature on the war is soon out-of-date. In time there will be a mass of material from which to select. Many text-books will be revised as a result of the war.

A course in War Issues may begin as far back as 1815, or the year 1848, or it may begin with the formation of the German Empire.

Prof. Larson suggested the use of a pamphlet following Robinson's History of Western Europe as a supplement, or Hayes' A History of the War.

In answer to a query, Prof. Larson stated that a two weeks course is not worth while.

The second half of the session was given over to Prof. A. C. McLaughlin who addressed the assembly on the subject of "Britain and America." Prof. McLaughlin recently lectured in England and had an opportunity to study the English people and their relationship to us of America.

He chose as the foundation upon which he built his address three quotations. The first consisted of words of Edith Cavell shortly before her execution: "I now see that more than patriotism is necessary."

The second quotation is from our first Chief Justice, John Jay, who said: "The destruction of old Britain would hurt me. I wish her well. She gave an asylum to my ancestors."

An ex-minister to Germany, Andrew D. White, remarked to Empress Victoria, "It is a recollection of mine that I was brought up to abhor the memory of George III." The Empress replied, "I was brought up to adore the name of George Washington."

The first point brought out was that, as a nation, we are a leader in the realm of ideas and that we have just become conscious of it, the fact that we are a leader not being so new.

We have been the leader of the world for practically a century and a half. We are responsible for this leadership by what we have done in the past. Had we failed we never would have attained such a place as we now hold. And the world, as well as ourselves, has come to a self-consciousness of what we have done.

It is surprising to know how little people know about democracy. To some it means putting a slip of paper into a box. To others it means individualism—a certain independence. Democracy is essentially an ethical expression, not political. It is a friendliness, a regard for others, a companionship.

A democratic nation acts friendly toward other nations as opposed to autocratic nations who use force, show deceit and greed. We must continue our work of cooperating with democratic nations for the establishment of the ethics of democracy in the world. This means, above all others, we must work with Great Britain.

Illustrative of the use of terms, we Americans regard "England" with a mild antipathy but "Great Britain" with friendliness. Of all the peoples in the British Empire the Englishman is most unassuming and least irritable, the Scot being somewhat "Thistley" and the Irishman always looking for a complaint. As a people we seem to fit in with the Scotch and Irish better than the English as shown by speech. He attributes the dislike to personality.

For every type of Englishman, an American of similar type can be found. At least it is self-evident that the greatest Empire today could not have been built on cowardice, deceit, and tyranny. During the recent war Great Britain lost as many men in two weeks as we lost altogether. The Angel of Death has passed over every English home. We can get strength from these people.

The wrong impression of England has been due to our textbooks. The chapters on the American Revolution leave the idea of a tyrannical England. England is black and America white. But England is today upholding America and America is lauding England. We are passing in the dark.

Another aspect of the American Revolution is found in the speaker's statement that "the American Revolution is the brightest jewel in the diadem of Great Britain." The Revolution was Great Britain's. The origin of the people who rebelled and their language were hers. Everything had been worked out in England because England had allowed her people to think. She ought to glory in the Revolution.

The next sixty years were the years in which America was developing nineteenth century Democracy. It was our adolescent age in which there was much bitter feeling some of which was the fault of England. We were full of idealism—a candle to the rest of the world. The aristocratic classes held a narrow view and were only partly conscious of a wrong antagonism. But there has been a change in Eng-

land's attitude toward Democracy and today England is ahead of us in many aspects of Democracy.

The Civil War may be looked upon as an English Revolution. England looked on with abated breath and asked if Democracy could stand the test. There were many Englishmen who supported the North. They were the laborers of Northern England, the poorer people—in other words, the plain people.

When the bitter contest had ended Great Britain had to become democratic. Abraham Lincoln proved that a man need not be of a ruling class to be the leader of men. And so it was that England cast her lot with us.

In 1898 with no other friend in the world England stood by us with a navy that counted. And the world knew it.

In concluding the speaker reiterated the statement that we must work with Democracies; that Great Britain is greatest of them all; that English audiences have shown him this by their responsiveness. Englishmen think as we do and speak our language. They are not insular.

Prof. McLaughlin urged us to teach boys and girls to think politically and socially. It is doubtful whether there is a need of greater discipline in our schools particularly when we see that our schools have turned out such boys as the last two years have revealed. College graduates can become commissioned officers in six weeks. Germany says it can not be done in less than two years. We have shown that we did not fail in this great crisis. Ours is not discipline in the old Teutons sense.

The subject was open for discussion but there was no response and the meeting was adjourned by Prof. Greene.

Professor McLaughlin spoke on the subject of "Britain and America." Inasmuch as the address was not written it is possible to give only a short condensation of his remarks.

"Britain and America"

The statement made by Professor Larson that hereafter the teaching of history will be very largely influenced by the fact of this war—indeed, that it will affect our view of the whole development of history for hundreds of years before the present time—is in my judgment entirely correct. This does not mean that we shall distort historical facts, but only that the war is of such momentous consequence and will necessarily bring in such changes that the developments of the past which explain the present and future situation will necessarily receive new attention, and things which have before escaped us will attain a new prominence and meaning.

The study of American colonial history always has brought out the importance of the fact that representative institutions were established in the British colonies and that the principles of English liberty were planted on this side of the water and were developed under the opportunities offered by the new continent. A comparison of the colonies of other nations with those of Great Britain brings out very sharply the extent to which the British colonies were allowed to manage their own affairs in accordance with the time-honored principles of British liberty. It is only when we get to the revolutionary time that we find ourselves sharply criticising the mother country and apparently

thinking that Great Britain had suddenly become the home of despotism and of tyranny. It is unnecessary to attempt here a discussion of the rights and wrongs of the revolutionary argument and of the acts of Great Britain. Beyond all question the colonists stood for certain fundamental things which were very essential for human progress, and the parliament of Great Britain was not ready to recognize in the empire at large certain elementary principles which were the products of imperial history and, it may be said, insular history as well. The point to be emphasized, however, is that the American revolution was itself a credit to Great Britain inasmuch as only British colonists could possibly have staged a revolt of that character. Not only were principles of English liberty and English law used as a foundation of American argument and of American belief—especially those principles of free government which had been so stoutly affirmed in the seventeenth century—but the colonists showed an aptitude for government and for political argument which could be shown only by men who had had opportunities for practicing practical politics. In other words, the America of 1776 was a product of English generosity and the American revolution itself stands out as one of the greatest examples of the liberality of English imperialism. None but English colonists could have written those remarkably sane and wise state papers which came from the pens of Dickinson, Jefferson, John Adams and Sam Adams.

The ill feeling between the United States and the British which we know existed down to 1815 deserves no extended comment. We may pass on to the period between 1815 and the end of our Civil War. In many discussions of the present time that period is lost sight of altogether, and yet it was a period in which there was a good deal of ill feeling and distrust and not very many evidences of a desire for friendliness and good understanding. Part of this ill feeling was doubtless due to the unceasing criticism of America by some of the newspapers and periodicals of England, and doubtless some of it due to the irritating boastfulness of the self-confident Americans. On the whole there cannot be much doubt, I think, that the British aristocrat looked with misgiving on developing democracy in the new world. Probably some persons were consciously desirous of showing that democracy was untrustworthy and chaotic, while others were simply instinctively critical and took comfort in such evidences as they could gather that American civilization of those days was not upon the plane of British civilization and culture.

The outstanding fact on the whole is that, beginning about 1825 or 1830, the British liberal spirit, breaking away from the reactionary temper that had manifested itself after the defeat of Napoleon, began the transformation of English political and social life. In our school texts and in our general treatment of history from the American point of view, we have unwisely omitted reference to the changes that took place in Great Britain during the nineteenth century. The development of English liberalism, which has changed the whole constitution of the kingdom and the character of the empire, is the most striking fact in English history and one of the most significant things in the whole history of the nineteenth century. It may be an exaggeration to say that Britain was becoming Americanized, but perhaps that expression comes as near the truth as any single phrase could come. The leaders of liberal politics and thought were working successfully for the betterment of the working men of Great Britain and helping to break down the hard hand of employers and the grasp which the governing classes had on the social and political structure, and as men were liberal at home in their attitude toward the immediate needs of common men, so they became liberal, friendly and open-minded on problems of the empire and on matters of foreign intercourse.

The American Civil War marked a crisis in English history, as it did in the history of the United States. The aristocratic classes of Great Britain instinctively sympathized with the South. Not every member of the aristocracy or every person who was naturally of the Tory disposition looked with confidence to the breaking up of the United States and the dissolution of democracy.

There were many honorable exceptions. But on the whole it is probably safe to say that there was an instinctive feeling again that democracy by the great civil war was proving itself unstable, and probably in a good many quarters there was a feeling of relief in discovering the essential weakness of the democratic system. But the outcome of the Civil War and the character of Abraham Lincoln were in themselves convincing proofs of the strength of democracy and that great statesmanship could be found in a man who had not been favored by the traditional background of aristocratic leadership. In 1867 the Second Reform Bill was passed, and while this did not extend the electorate very widely, it nevertheless practically committed Great Britain to a movement toward a whole-hearted democratic system.

The development of democracy in Great Britain means, of course, that a change had come not only in the basis of government, but in the general attitude of mind toward human problems. It formed the basis for mutual understanding between Great Britain and the United States. Great Britain had put her hand to the plough and it was the American plough. Both countries stood for the confidence in the people and were prepared to entrust their destinies to the common sense of the plain people. Since 1867 other important changes have been made in British organization until today Britain is as democratic in its sentiment and spirit as we are ourselves. Any treatment of American history which leaves out these important facts omits to indicate the development in the world of the principles on which America was founded.

In an attempt to realize the necessity of our intimate friendship with Great Britain, we need to remember not only that Great Britain has been influenced by the development of our democracy, not only that we use the same language and the same common law, and use the principles of English liberty for which Englishmen gave up their lives in the seventeenth century, but that the British people again in this war have shown themselves prepared to offer their sacrifice for the maintenance of liberty. They have done this with a wholeheartedness and a common devotion which is very inspiring. In my visit to England in the spring of 1918 I found great admiration for America, but more than that, a sense of common confidence that Britain and America stood for the same general things in the world and would hereafter co-operate in a friendly and magnanimous way. It seemed to me that it was not the material aid which America was giving in the war, but the very presence of the United States and our readiness to act which were the chief source of consolation. Britain had been suffering untold and untellable distress, people had been bearing this agony uncomplainingly, and it was not so much material aid as the spiritual comfort which came from America's readiness to act which was most deeply appreciated. Comfort came from the sense of friendly companionship. Whatever may be done in the way of building a league of nations—and that is, I believe, highly desirable if not absolutely essential—Great Britain and America, founded upon the same general principles, need to co-operate in an open-hearted and companionable way. There may be no need of any form of formal alliance. The world hereafter, we may imagine, is not to be ruled by pieces of paper or by tangible institutions so much as by highly developed and intelligent public opinion. It is necessary for us Americans to develop in our schools and colleges a knowledge of world forces and an appreciation of the responsibilities which democracy has assumed.

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